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U.S. Department
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DOT HS 806 849

December 1984

Final Report

Side-Impact Aggressiveness Attributes MDB-To-Car Side Impact Test of a 26° Crabbed Moving Deformable Barrier to a 1981 Volkswagen Rabbit at 39.1 Mph

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16. Abstract This test report documents one of a series of twelve crash tests to evaluate the side impact aggressiveness attributes of various deformable barrier face configurations. The configurations to be used are designated as "Lowered Stiffness", "Altered Profile" and "Lowered Bumper". Testing was conducted on a 1981 diesel Volkswagen Rabbit 2-door hatchback at the TRCO Crash Test Facility, East Liberty, Ohio. The test vehicle was impacted on the left side by a moving deformable barrier designated as "Lowered Bumper", crabbled to 26°, at 39.1 mph. Occupant responses of two side impact dummies were measured. One dummy was located in the driver's designated seating position and one was located in the left rear passenger position. The test date was October 26, 1984 and the ambient temperature was 70° F.					
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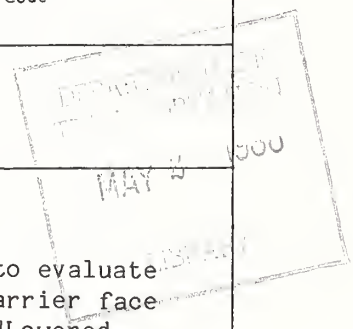


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SECTION 1.0
PURPOSE AND INTRODUCTION

PURPOSE

The main purpose of this test was to evaluate the side impact aggressiveness of a deformable barrier face designated as "Lowered Bumper". In all, there will be twelve crash tests involving deformable barrier faces designated as "Lowered Stiffness", "Altered Profile" and "Lowered Bumper". The vehicle was tested using conditions not currently contained in a Federal Motor Vehicle Safety Standard.

INTRODUCTION

A stationary 1981 Volkswagen Rabbit 2-door hatchback was impacted on the left side by a Moving Deformable Barrier (MDB) on October 26, 1984. The test was to simulate an intersection collision with the striking vehicle traveling at 35 mph and the struck vehicle traveling at 17.5 mph. The orientation angle of the striking vehicle was 90⁰ counterclockwise with respect to the longitudinal axis of the struck vehicle. The impact point was to be 37 inches forward of the vehicle center of gravity which is defined by accident investigation to be the midpoint of the wheelbase.

To simulate this collision, the MDB was to be towed into the stationary Volkswagen Rabbit at 39.1 mph with the MDB's wheels crabbed clockwise to 26⁰. The actual test speed was 39.1 mph and the actual impact point was 37.0 inches forward of the midpoint of the Volkswagen Rabbit's wheelbase.

The left front window of the vehicle was structurally modified. No additional padding was added to the vehicle.

Section 2 contains General Test and Vehicle Parameter Data. Section 3 contains data required by R & D. Appendix A contains pre-test and post-test vehicle and dummy photographs. Appendix B contains Data Plots.

SECTION 2.0
GENERAL TEST AND VEHICLE PARAMETER DATA

The following data sheets describe the General Test and Vehicle Parameter Data.

TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Volkswagen of America, Inc.

MAKE/MODEL: Volkswagen Rabbit Diesel VIN: 1VWBG017BBV042743

BODY STYLE: 2-Door Hatchback MODEL YEAR: 1981

NHTSA NO.: R & D COLOR: Black

ENGINE DATA: TYPE: Transverse CYLINDERS: 4 DISPLACEMENT 1700 cc

TRANSMISSION DATA: 5 Speed Manual

DATE VEHICLE RECEIVED: 10/9/84 ODOMETER READING: 34722

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

POWER STEERING	No	AUTOMATIC TRANSMISSION	No
POWER BRAKES	No	AUTOMATIC SPEED CONTROL	No
POWER SEATS	No	TILTING STEERING WHEEL	No
POWER WINDOWS	No	TELESCOPING STEERING WHEEL	No
TINTED GLASS	No	AIR CONDITIONING	No
RADIO	No	ANTI-SKID BRAKE	No
CLOCK	No	REAR WINDOW DEFROSTER	Yes
OTHER			

REMARKS:

1. IS THE VEHICLE STOCK THROUGHOUT? No*
2. DOES VEHICLE SHOW EVIDENCE OF PRIOR ACCIDENT HISTORY? No
3. DOES VEHICLE SHOW ANY SIGNIFICANT CORROSION? No
4. CONDITION OF THE FRONT/REAR BUMPER AND FRAME: Good

DATA FROM CERTIFICATION LABEL ON LEFT DOOR FACE OR "B" POST:

VEHICLE MANUFACTURED BY: Volkswagen of America, Inc.

DATE OF MANUFACTURE: 11/80

GVWR: 2822 LBS.,

GAWR: FRONT 1609 LBS., REAR 1278 LBS.

*The driver window had a laminated inner surface. This window was fixed in the closed position by the use of several small bolts through the window frame.

VEHICLE TIRE DATA

RECOMMENDED COLD TIRE PRESSURE: FRONT 27 psi; REAR 31 psi

TIRES ON VEHICLE (MFGR. & LINE, SIZE): BF Goodrich Belted CIM P 165/80B13

BIAS PLY, BELTED, OR RADIAL: Belted

PLY RATING: 4

IS SPARE TIRE "SPACE SAVER"? No

IS SPARE TIRE STANDARD EQUIPMENT? Yes

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (WITH ESTIMATED FLUIDS):

RIGHT FRONT	650	LBS.	RIGHT REAR	350	LBS.
LEFT FRONT	670	LBS.	LEFT REAR	350	LBS.
TOTAL FRONT WEIGHT	1320		LBS. (65.3 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	700		LBS. (34.7 % OF TOTAL VEHICLE WEIGHT)		
TOTAL DELIVERED WEIGHT	2020		LBS.		

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE:	RF 24 9/16	;LF 24 7/16	;RR 25 1/8	;LR 25 3/16
PRE-TEST ATTITUDE:	RF 23 11/16	;LF 24 1/16	;RR 22 3/16	;LR 22 7/16
POST-TEST ATTITUDE:	RF 25 3/16	;LF 28	;RR 22	;LR 23 5/8

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 185 LBS. CARGO:

RIGHT FRONT	710	LBS.	RIGHT REAR	545	LBS.
LEFT FRONT	730	LBS.	LEFT REAR	560	LBS.
TOTAL FRONT WEIGHT	1440		LBS. (56.6 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	1105		LBS. (43.4 % OF TOTAL VEHICLE WEIGHT)		
TOTAL TEST WEIGHT	2545		LBS.		

WEIGHT OF BALLAST SECURED IN VEHICLE TRUNK AREA: 0 LBS.

TEST FLUID DATA

TEST FLUID TYPE: RED STODDARD SOLVENT #2; SPEC. GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

"USEABLE" CAPACITY*: NA GALLONS

TEST VOLUME: 4.0 GALLONS

FUEL SYSTEM CAPACITY (DATA FROM OWNERS MANUAL): 10.0 GALLONS

DETAILS OF FUEL SYSTEM: DNA

ELECTRIC FUEL PUMP: Yes

FUEL INJECTION: Yes

DOES ELECTRIC FUEL PUMP OPERATE WITH IGNITION SWITCH "ON" AND THE ENGINE NOT OPERATING? No

DATA FROM "RECOMMENDED TIRE PRESSURE" LABEL ON DOOR, POST, GLOVEBOX, ETC.

VEHICLE LOAD (UP TO CAPACITY): FRONT 27 psi; REAR 31 psi

RECOMMENDED TIRE SIZE: 155 SR 13 LOAD RANGE X B, C,

VEHICLE CAPACITY: TYPES OF SEATS: Front - Bucket
Rear - Bench

NUMBER OF OCCUPANTS (DESIGNATED SEATING CAPACITY): 2 FRONT

2 REAR

CARGO LOAD 185 LBS.

4 TOTAL

TOTAL 785 LBS.

*WITH ENTIRE FUEL SYSTEM FILLED WITH FUEL TANK THROUGH CARBURETOR BOWL.

TEST CONDITIONS

TEST NUMBER: 841026

DATE OF TEST: October 26, 1984

TIME OF TEST: 14:00

WIND VELOCITY: 6-12 mph 225° SW

HUMIDITY: NA

AMBIENT TEMPERATURE AT IMPACT AREA: 70° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 78° F

SUBJECT VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE TEST WEIGHT (LBS.)	2545	2553
MDB TEST WEIGHT (LBS.)	2990	3000
MDB VELOCITY (MPH)*	39.1	39.1
IMPACT POINT (INCHES)**	37.0	37.0

DUMMIES

	<u>DRIVER</u>	<u>MIDDLE PASSENGER</u>	<u>RT. FRONT PASSENGER</u>	<u>LEFT REAR PASSENGER</u>	<u>RT. REAR PASSENGER</u>
TYPE:	SID			SID	
SERIAL NO.:	06			U02	
INSTRUMENTATION:					
HEAD ACCEL.:	Yes			Yes	
CHEST ACCEL.:	Yes (Upper/Lower)			Yes (Upper/Lower)	
FEMUR L.C.'S:	No			No	
OTHER:	Pelvis/Ribs			Pelvis/Ribs	

RESTRAINT SYSTEM: Both dummies were unrestrained

* As measured over final one foot of travel.

** As measured forward of the midpoint of the vehicle's wheelbase.

VISIBLE DUMMY CONTACT POINTS:

	DRIVER 06	PASSENGER U02
Head	Side Window, Driver Seat Head Rest	Side Header, Hatchback Frame
Chest	Inner Door Panel	Rear Quarter Panel
Abdomen	Inner Door Panel	Rear Quarter Panel
Left Knee	Inner Door Panel	Rear Quarter Panel
Right Knee	Left Knee	Left Knee

DOOR OPENING:

	LEFT	RIGHT
Front	DNA*	Easy
Rear	DNA	DNA

SEAT MOVEMENT:

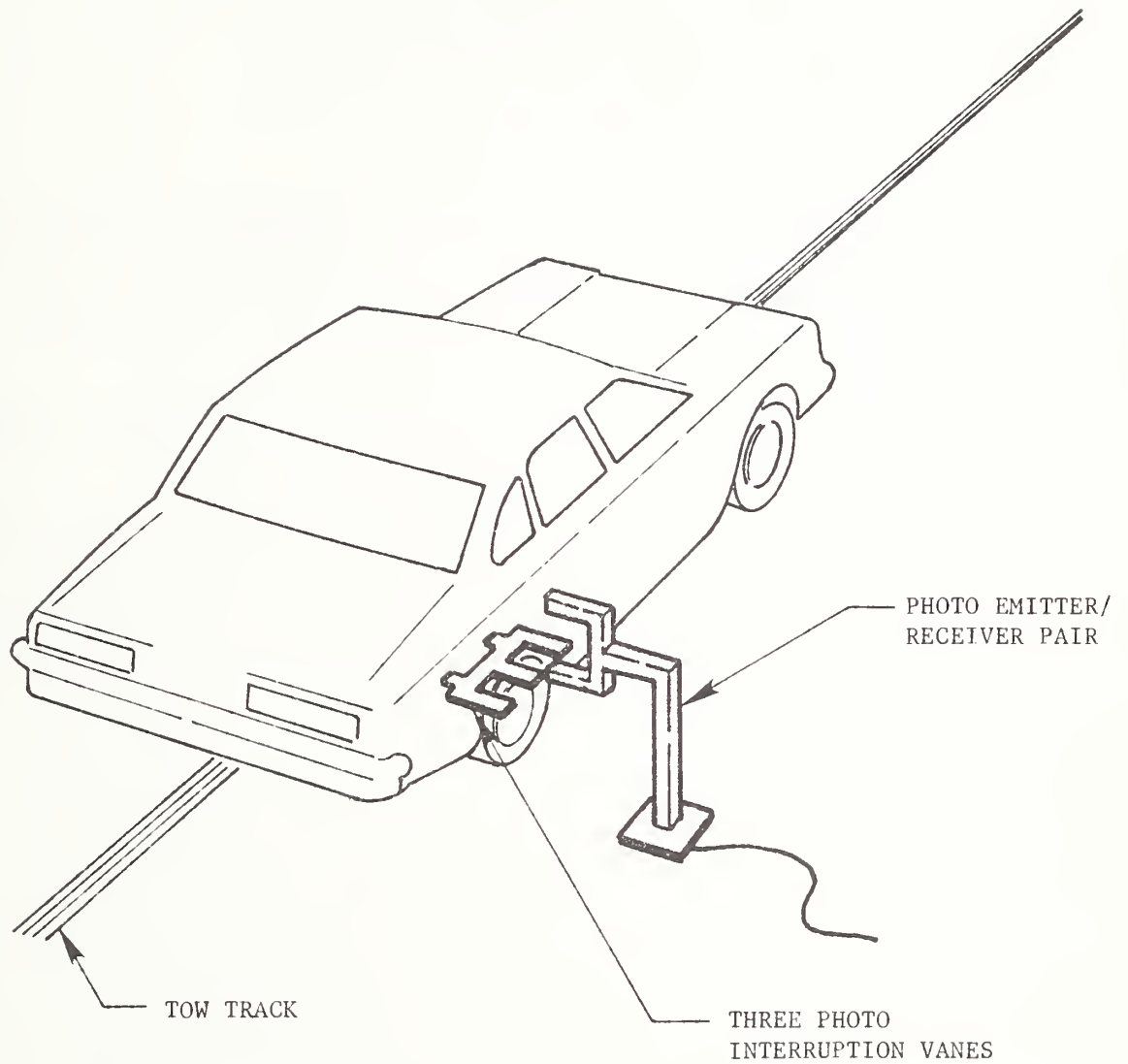
	SEAT BACK FAILURE	SEAT SHIFT
Front	No	No
Rear	No	No

GLAZING DAMAGE: The bottom edge of the windshield popped out of the
frame; windshield cracked on driver's side.

OTHER NOTABLE IMPACT EFFECTS:

*The driver's door was to remain closed for subsequent door opening effort studies.

IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane is located two inches before impact.

The vanes have one foot spacing.

VEHICLE TEST WEIGHT CALCULATION

$$\begin{aligned}\text{Test Weight} &= \text{Unloaded Delivered Weight*} + \\ &\quad \text{Number of Dummies X 174 lbs.} + \\ &\quad \text{Cargo Weight} \\ &= 2020 + 2 \times 174 + 185 \text{ lbs.} \\ &= 2553 \text{ lbs.}\end{aligned}$$

To achieve test weight, the starter, alternator and battery were removed and 4.0 gallons of Stoddard Solvent were added in the fuel tank. The weight of the test vehicle was measured by placing each wheel on a Loadmeter Corporation Hiway Loadometer.

$$\begin{aligned}\text{*Unloaded Delivered Weight} &= \text{Measured Weight} + \text{Estimated 10 Gallons Fuel} \\ &= 1960 + 60 \text{ lbs.} \\ &= 2020 \text{ lbs.}\end{aligned}$$

TEST ANOMALIES

The accelerometer in the passenger's head, "y" axis, HEDYG3, developed a mechanical failure during the test. Therefore, data from this channel, and the passenger head resultant calculation should be disregarded.

SECTION 3.0
DATA REQUIRED BY R & D

The following pages are included in this section:

1. Dummy temperature control and position data
2. Dummy kinematic summary
3. Vehicle crush data
4. Dummy and vehicle accelerometer location and data summary
5. High speed camera information
6. Transducer information

DUMMY TEMPERATURE CONTROL AND POSITIONING

The vehicle was kept inside the temperature controlled crash test building until approximately 2 hours prior to the test. Temperature inside the vehicle and ambient temperature at the crash area were recorded. Dummy temperature while outside the crash test building was maintained portably until approximately 1 minute prior to the test.

The following table summarizes the steps taken to position the instrumented, calibrated dummies in the test vehicle.

DUMMY PLACEMENT AND POSITIONING

SIDE IMPACT DUMMY

DRIVER DSP

REAR PASSENGER DSP

HEAD	Surface of transverse instrument mounting platform is as horizontal as possible without inducing torso movement & midsagittal plane falls in longitudinal plane.	Surface of transverse instrument mounting platform is as horizontal as possible without inducing torso movement & midsagittal plane falls in longitudinal plane.
UPPER TORSO	Placed against seat back. Midsagittal plane is vertical and centered on bucket seat.	Placed against seat back. Midsagittal plane is vertical and contained in the same longitudinal plane as the driver's midsagittal plane.
LOWER TORSO	Midsagittal plane is vertical and centered on bucket seat.	Midsagittal plane is vertical and contained in the same longitudinal plane as the driver's midsagittal plane.
UPPER LEGS (thighs or femurs)	Placed against seat cushion. Planes defined by femur and tibia centerlines are as close as possible to vertical.	Placed against seat cushion. Planes defined by femur and tibia centerlines are as close as possible to vertical.
KNEES	Knees set 14.5" apart between pivot bolt head outer surfaces. Outer surface of right knee pivot bolt is 8.6" from midsagittal plane of dummy. Outer surface of left knee pivot bolt is 5.9" from midsagittal plane of dummy.	Located so that planes defined by femur and tibia centerlines are as close as possible to vertical.
LOWER LEGS	Plane defined by femur and tibia centerlines are as close as possible to vertical longitudinal plane.	Plane defined by femur and tibia centerlines are as close as possible to vertical longitudinal plane.
RIGHT FOOT	Placed on undepressed accelerator pedal -- rearmost point of heel on floorplan in plane of pedal.	Centerline falls in vertical longitudinal plane. Placed on floor as far forward as possible without front seat interference.
LEFT FOOT	Placed on toeboard -- rearmost point of heel on floorpan as close as possible to intersection of toeboard and floorpan. Centerline falls in vertical longitudinal plane.	Centerline falls in vertical longitudinal plane. Placed on floor as far forward as possible without front seat interference.

*NOTE: THE SIDE IMPACT DUMMY DOES NOT INCLUDE ARMS.

DUMMY IN-VEHICLE POSITION RECORDING SHEET

VEHICLE NHTSA NO. R & D

MFR./MAKE/MODEL: Volkswagen Rabbit

FRONT SEAT TYPE: BENCH
 X BUCKET
 SPLIT BENCH

ADJUSTER TYPE: X MANUAL
 POWER

BUCKET SEAT BACK TYPE: FIXED
 X ADJUSTABLE

TECHNICIANS:

1. D. LeVally

2. N. Echeverria

3. J. Clarridge

POSITIONING DATE: 10/26/84

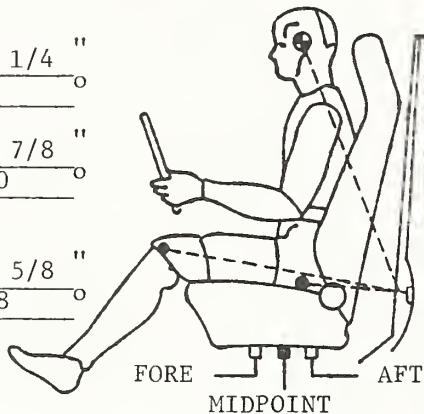
AMBIENT TEMP.: 72° F. TIME: 9:00

DRIVER DUMMY # 06

HEAD 19 1/4 "
 TARGET*32 °

KNEE 33 7/8 "
 JOINT 100 °

APPROX.
 "H" 20 5/8 "
 POINT 118 °

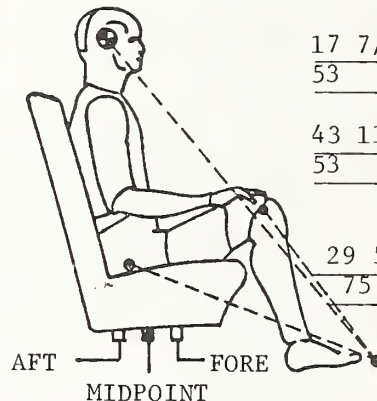


REAR PASSENGER DUMMY # U02

17 7/8 "HEAD
53 °TARGET**

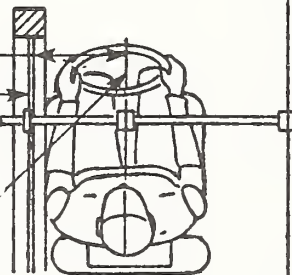
43 11/16 "KNEE
53 °JOINT

APPROX.
29 5/8 " "H"
75 °POINT



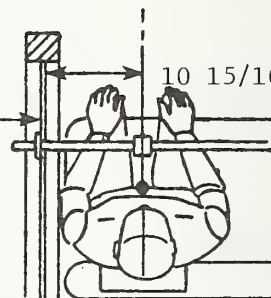
DOOR
 GLASS
 HEIGHT*** 11 7/16 "
 NA

LATERAL BAR
 ADJUSTABLE
 POINTER



DRIVER
 DUMMY #
06

DOOR
 GLASS
 HEIGHT NA 10 15/16 "

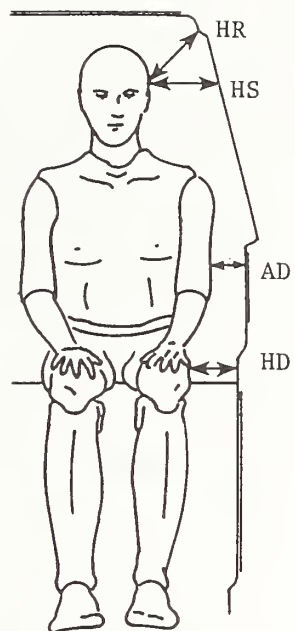


PASSENGER
 DUMMY #
U02

*All driver dummy dimensions referenced to top of striker bolt and all angles referenced to vertical.

**All passenger dummy dimensions referenced to front seat back latch bolt with front seat in mid-position and all angles referenced to vertical.

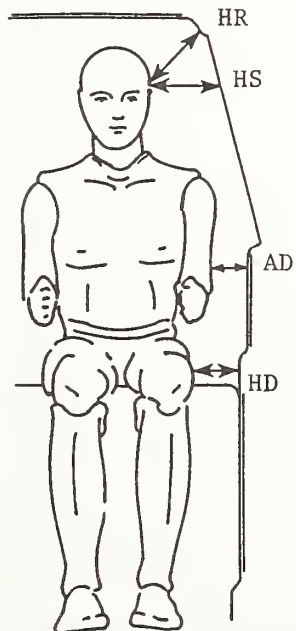
***Door glass height is equal on the right and left side of vehicle at dummy nose level.



DRIVER
06

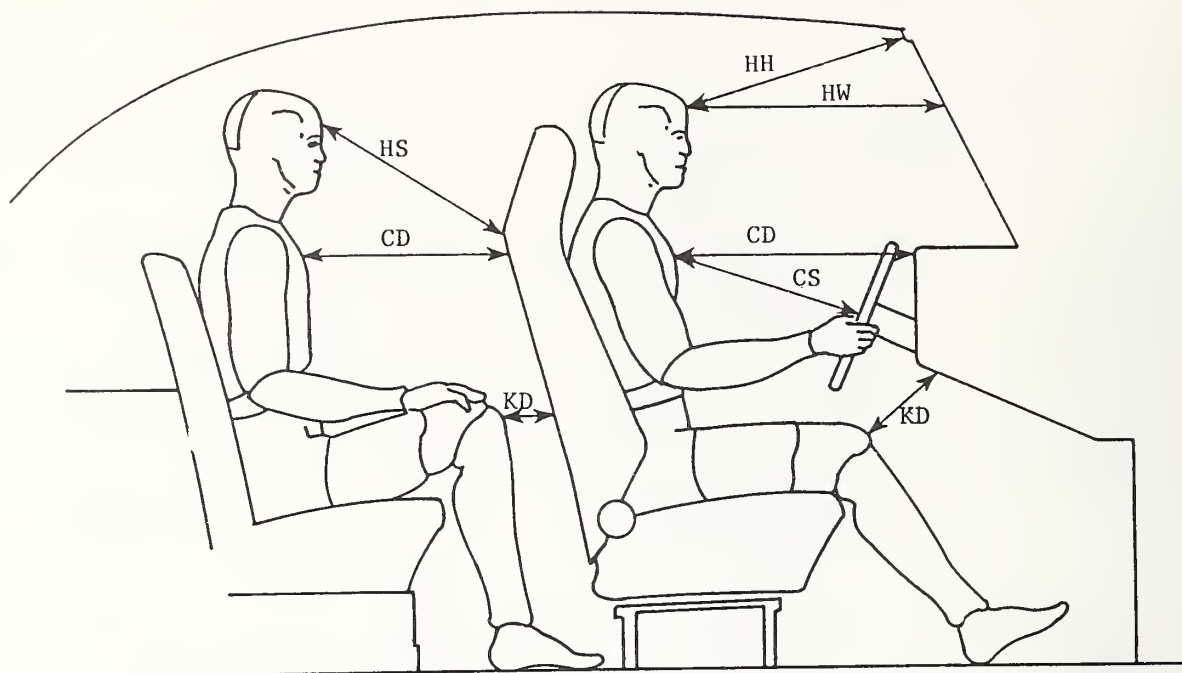
PASSENGER
U02

HR	7 1/8	6 1/2
HS	8 1/4	8 1/4
AD	4 3/16	4 11/16
HD	6 5/8	6 5/16



ALL MEASUREMENTS IN INCHES

DUMMY LATERAL CLEARANCE DIMENSIONS



DRIVER

PASSENGER

06

U02

HH	17 3/4	DNA
HW	21 7/8	DNA
HS	DNA	21 3/16
CD	21	16 13/16
CS	13 5/8	DNA
KDL	3 15/16	4
KDR	4 1/2	3 5/16

ALL MEASUREMENTS IN INCHES

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

DUMMY KINEMATIC SUMMARY

DRIVER

During impact, the dash panel below the steering column burst inward hitting the dummy's knees. The left hip of the dummy contacted the inner panel as the door caved in. As the buttocks swung to the right, the dummy's left shoulder and chest contacted the window sill and door panel while the head struck the modified window. The dummy rebounded from the inner door panel, the torso lifting slightly and rotating towards the left. As the driver landed on the far side of the vehicle, the head contacted the driver's seat head rest. Final resting position showed the driver sitting upright in the passenger's seat facing left with the legs fully extended across the occupant compartment.

PASSENGER

During impact, the rear quarter panel crushed in, hitting the dummy's left knee and hip. As the dummy rebounded from the door panel towards the right, the dummy's torso leaned left. The passenger's head then hit the side header and the hatchback frame. The dummy came to rest in an upright position with his upper torso leaning slightly left and his head resting against the left side header.

VEHICLE EXTERIOR PROFILES AND STATIC CRUSH

ZERO DISTANCE AT PROJECTED IMPACT POINT*

LOCATION	HEIGHT (in)	6	0	6	12	18	24	30	36	42	48	54	60	66	72	78
		PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)														
Axle Height	11.8	X	X	20.6	20.5	20.4	20.5	20.4	20.4	20.4	20.5	20.5	20.5	20.6	X	X
H-Point	21.3	X	17.6	18.6	18.6	18.5	18.4	18.4	18.4	18.4	18.5	18.6	18.7	18.9	17.9	X
Mid Door	25.3	17.3	18.5	18.3	18.3	18.2	18.1	18.1	18.1	18.1	18.1	18.3	18.4	18.4	18.5	16.9
Window Sill	35.8	20.8	20.4	20.1	20.0	19.9	19.9	19.8	19.8	19.8	19.8	19.9	19.9	20.1	20.2	20.3
Window Top	54.6	X	X	X	X	X	28.4	28.1	28.0	27.9	27.9	27.9	28.0	28.1	28.3	28.6

POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)

Axle Height	11.8	X	X	32.1	34.5	34.3	34.0	33.8	33.7	33.6	33.3	32.9	30.9	27.7	X	X
H-Point	21.3	X	27.6	30.8	31.3	31.5	31.5	31.6	31.7	32.0	32.3	32.9	33.2	30.1	25.6	X
Mid Door	25.3	25.4	27.3	29.9	31.3	31.0	30.9	30.9	31.0	31.1	31.3	31.9	32.0	30.9	26.2	22.4
Window Sill	35.8	23.6	24.0	25.6	29.9	30.8	31.5	31.7	31.4	31.8	32.3	32.6	33.0	32.0	27.4	23.7
Window Top	54.6	X	X	X	X	X	30.3	29.3	29.6	29.5	29.6	29.5	29.3	29.0	29.0	29.0

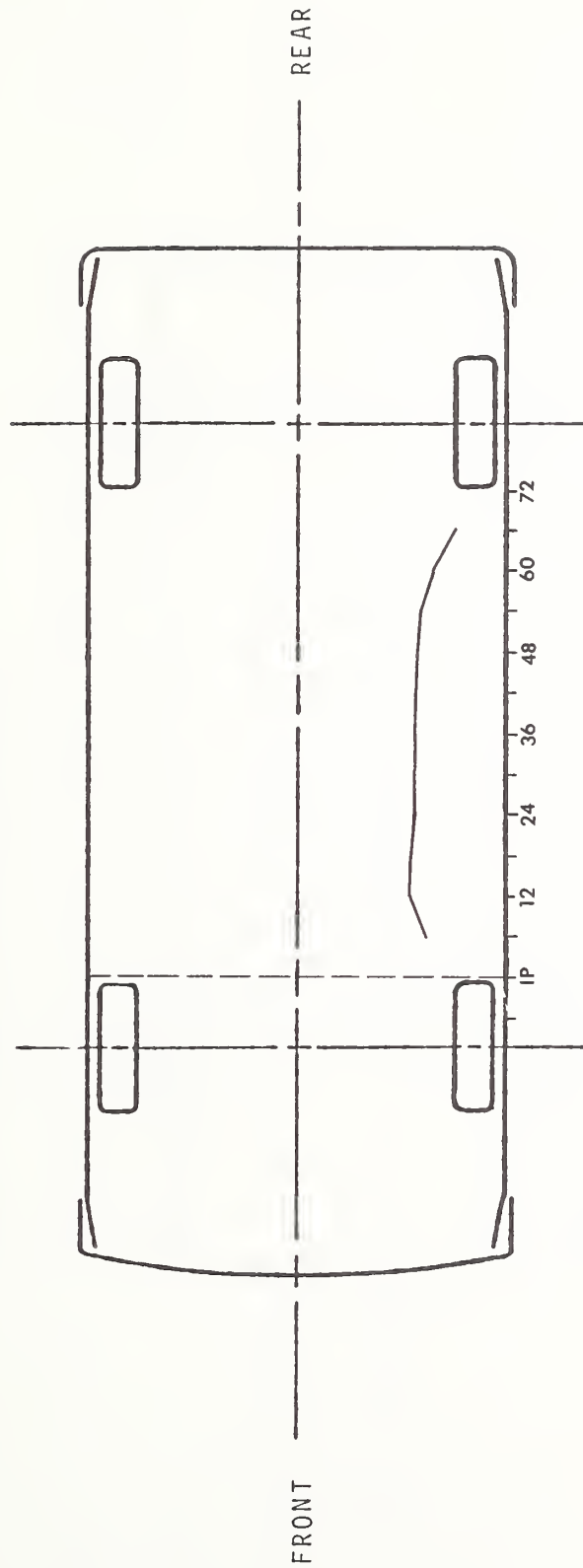
STATIC CRUSH (IN)

Axle Height	11.8	X	X	11.5	14.0	13.9	13.5	13.4	13.3	13.2	12.8	12.4	10.4	7.1	X	X
H-Point	21.3	X	10.0	12.2	12.7	13.0	13.1	13.2	13.3	13.6	13.8	14.3	14.5	11.2	7.7	X
Mid Door	25.3	8.1	8.8	11.6	13.0	12.8	12.8	12.8	12.9	13.0	13.2	13.6	13.6	12.5	7.7	5.5
Window Sill	35.8	2.8	3.6	5.5	9.9	10.9	11.6	11.9	11.6	12.0	12.5	12.7	13.1	11.9	7.2	3.4
Window Top	54.6	X	X	X	X	X	1.9	1.2	1.6	1.6	1.7	1.6	1.3	0.9	0.7	0.4

* Projected impact point is 37 inches forward of driver's side wheelbase midpoint. Column readings are front to rear from left to right.

** Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

VEHICLE EXTERIOR STATIC CRUSH PROFILE

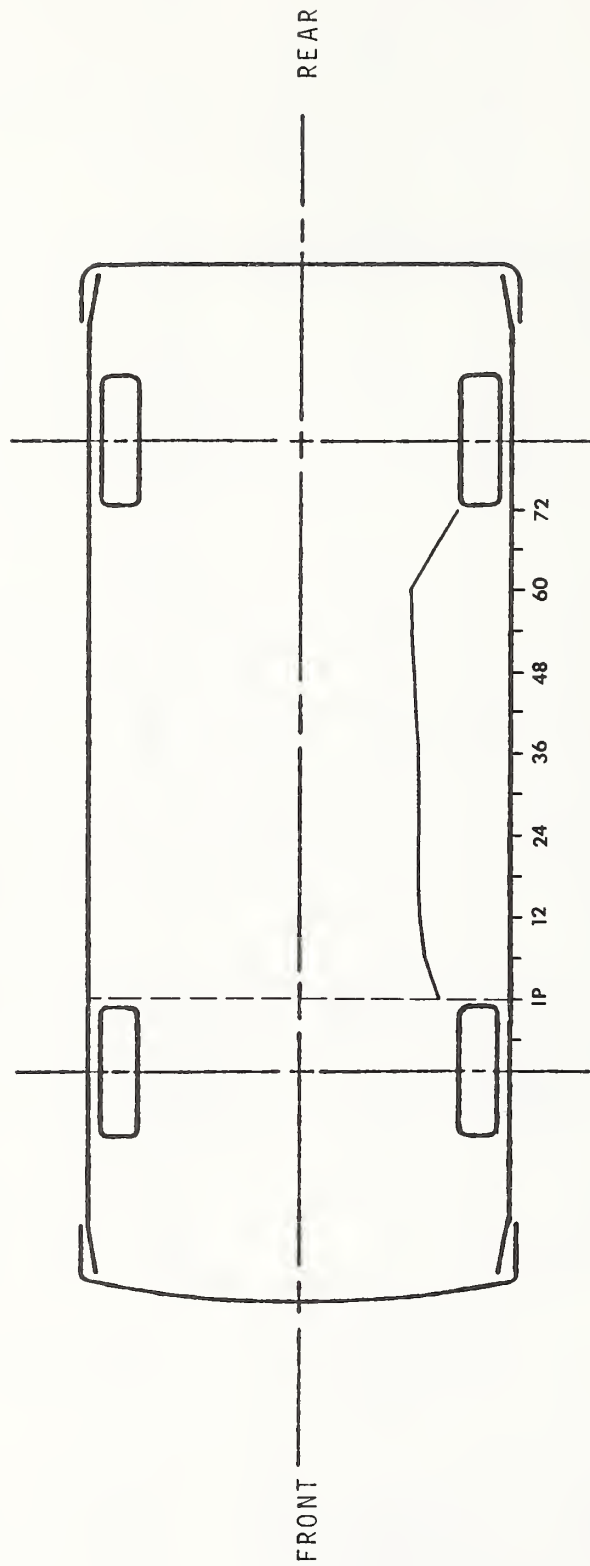


PROFILE LEVEL EQUALS AXLE HEIGHT
IP EQUALS PROJECTED IMPACT POINT

Length of Car = 154.75"
Width of Car = 62.75"

Maximum Crush = 14.0"
Approximate Length of Crush = 60.0"

VEHICLE EXTERIOR STATIC CRUSH PROFILE

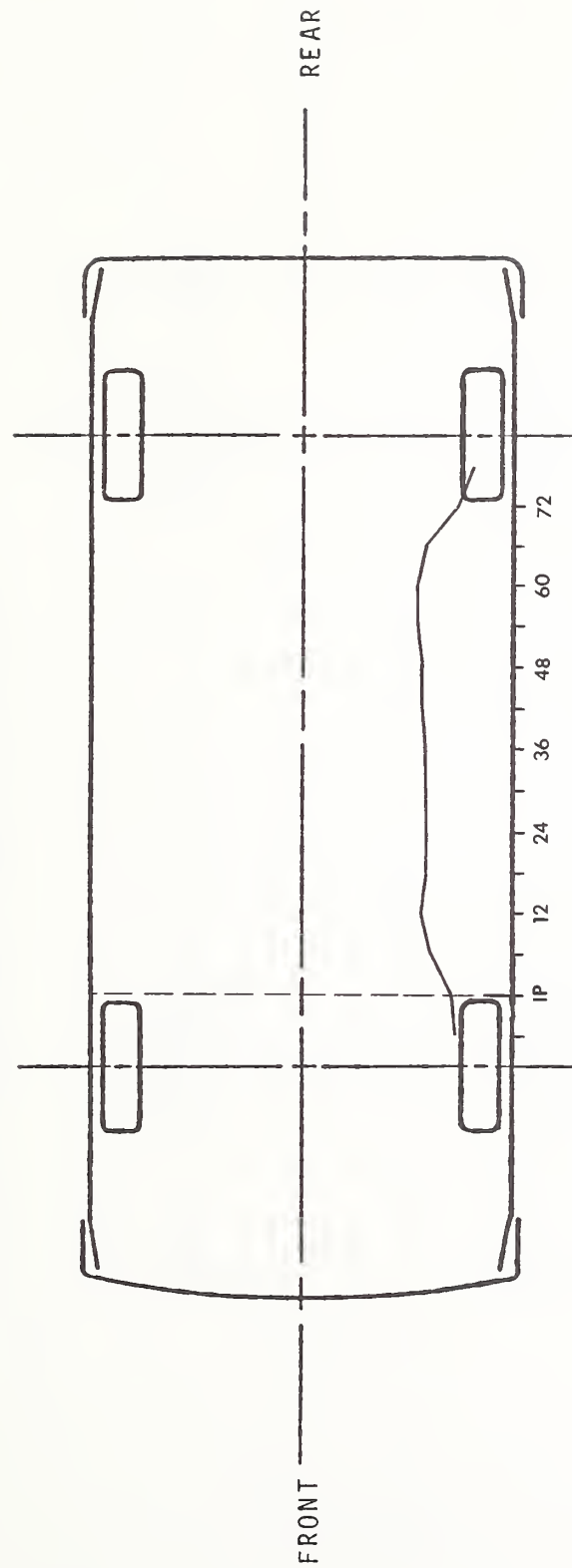


PROFILE LEVEL EQUALS H-POINT HEIGHT
IP EQUALS PROJECTED IMPACT POINT

Length of Car = 154.75"
Width of Car = 62.75"

Maximum Crush = 14.5"
Approximate Length of Crush = 72"

VEHICLE EXTERIOR STATIC CRUSH PROFILE

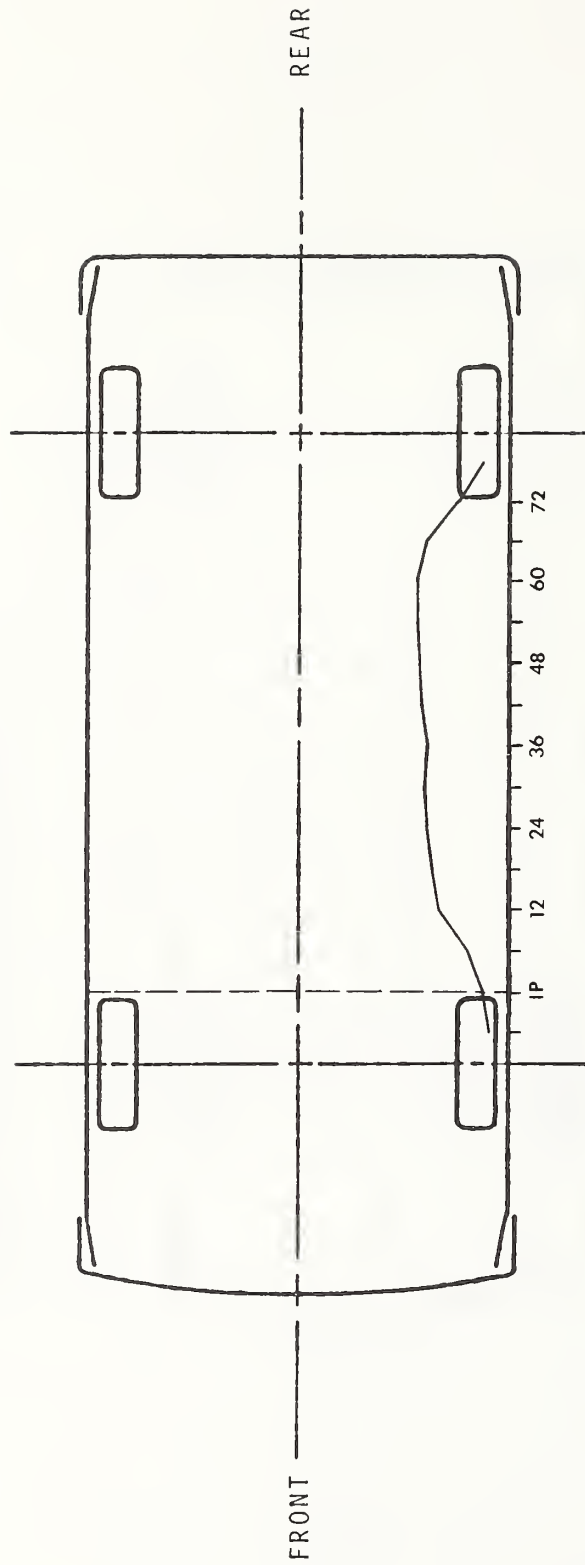


PROFILE LEVEL EQUALS MID-DOOR HEIGHT
IP EQUALS PROJECTED IMPACT POINT

Length of Car = 154.75"
Width of Car = 62.75"

Maximum Crush = 13.6"
Approximate Length of Crush = 84"

VEHICLE EXTERIOR STATIC CRUSH PROFILE

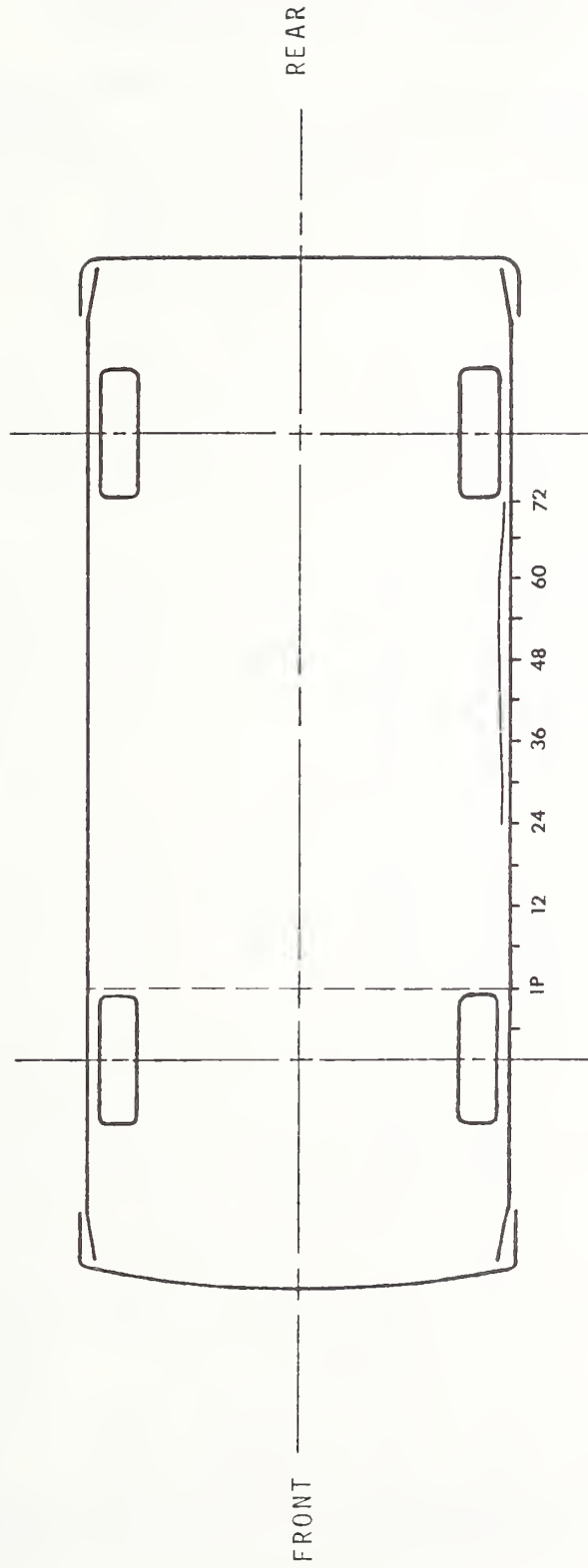


PROFILE LEVEL EQUALS WINDOW SILL HEIGHT
 IP EQUALS PROJECTED IMPACT POINT

Length of Car = 154.75"
 Width of Car = 62.75"

Maximum Crush = 13.1"
 Approximate Length of Crush = 84"

VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW TOP HEIGHT
 IP EQUALS PROJECTED IMPACT POINT

Length of Car = 154.75"
 Width of Car = 62.75"

Maximum Crush = 1.9"
 Approximate Length of Crush = 84"

SIDE IMPACT DUMMY DATA SUMMARY

	DRIVER DUMMY				PASSENGER DUMMY			
	POSITIVE DIRECTION*		NEGATIVE DIRECTION**		POSITIVE DIRECTION*		NEGATIVE DIRECTION**	
	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
HEAD ACCELERATION								
LONGITUDINAL	14.28	284.13	30.94	41.38	14.49	157.00	37.29	50.38
LATERAL	55.74	41.38	18.89	28.75	164.96	50.50 ^Y	14.61	66.00 ^Y
VERTICAL	14.63	27.13	85.32	59.50	43.55	54.63	29.34	40.63
RESULTANT		87.49 @	59.50			169.93 @	50.50 ^Y	
HIC	616.10	from 34.00 to 64.50			1582.85	from 47.00 to 56.00		
CHEST ACCELERATION								
UPPER SPINE								
LONGITUDINAL	56.46	43.13	39.51	32.50	6.87	90.62	24.88	58.13
LATERAL (P)***	109.89	33.13	48.40	52.50	63.37	45.62	7.17	32.50
LATERAL (R)***	112.11	33.13	47.18	52.50	65.03	45.62	7.06	31.88
VERTICAL	29.77	26.87	32.61	35.00	10.53	28.13	20.78	56.25
RESULTANT (P)		118.66 @	33.13			64.92 @	45.62	
RESULTANT (R)		120.71 @	33.13			66.54 @	45.62	
DELTA V (MPH)****		31.5 @	49.37 (P)			25.5 @	114.37 (P)	
		32.8 @	50.00 (R)			26.7 @	115.62 (R)	
LOWER SPINE								
LONGITUDINAL	76.89	40.00	76.90	28.75	16.45	62.50	25.85	34.38
LATERAL (P)	208.10	28.13	36.83	52.50	74.79	38.75	24.90	58.75
LATERAL (R)	208.10	28.13	36.63	52.50	77.69	39.38	24.55	58.75
VERTICAL	38.44	28.13	12.05	35.63	8.34	42.50	3.28	56.87
RESULTANT (P)		223.65 @	28.13			75.91 @	37.50	
RESULTANT (R)		223.65 @	28.13			78.26 @	38.75	
DELTA V (MPH)		37.2 @	45.00 (P)			28.2 @	53.75 (P)	
		39.4 @	45.00 (R)			29.3 @	54.38 (R)	
LEFT UPPER RIB								
LATERAL (P)	129.18	25.00	17.37	38.75	79.17	31.25	2.04	71.88
LATERAL (R)	135.96	24.38	13.15	38.13	76.33	31.88	4.60	57.50
DELTA V (MPH)		30.2 @	63.75 (P)			29.9 @	123.75 (P)	
		30.7 @	63.75 (R)			30.7 @	133.75 (R)	
LEFT LOWER RIB								
LATERAL (P)	165.39	25.00	46.46	58.75	67.65	28.75	13.01	55.00
LATERAL (R)	170.88	24.38	50.68	58.75	79.33	28.75	12.10	61.87
DELTA V (MPH)		33.4 @	55.00 (P)			27.2 @	53.75 (P)	
		33.8 @	55.00 (R)			25.2 @	53.75 (R)	
PELVIS ACCELERATION								
LONGITUDINAL	6.42	60.63	16.79	28.50	8.90	78.88	---	---
LATERAL	221.18	28.00	12.02	43.25	---	---	---	---
VERTICAL	32.45	25.13	45.11	28.88	---	---	---	---
RESULTANT		224.63 @	28.13			---	---	---
DELTA V (MPH)		35.0 @	64.13			---	---	---

SIDE IMPACT DUMMY DATA SUMMARY CONTD

		<u>DRIVER DUMMY</u>				<u>PASSENGER DUMMY</u>			
		<u>POSITIVE</u>		<u>NEGATIVE</u>		<u>POSITIVE</u>		<u>NEGATIVE</u>	
		<u>DIRECTION*</u>		<u>DIRECTION**</u>		<u>DIRECTION*</u>		<u>DIRECTION**</u>	
		<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>
		<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>
RIB DEFLECTION	†	1.91	90.25	---	--- ^ε	1.62	60.88	---	--- ^ε

* LONGITUDINAL: FORWARD
 LATERAL: RIGHTWARD
 VERTICAL: UPWARD

**LONGITUDINAL: REARWARD
 LATERAL: LEFTWARD
 VERTICAL: DOWNWARD

*** (P) = Primary Sensor, (R) = Redundant Sensor

**** For dummy channels, Delta V is the velocity change at the approximate time of separation from the contact area.

† Compression: Positive

γ See TEST ANOMALIES

° The CTM has judged that intermittent rattling has occurred in these channels and, therefore, the peak values reported are questionable as are applicable resultants and Delta V's.

ε There were no negative values in the time interval of interest.

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

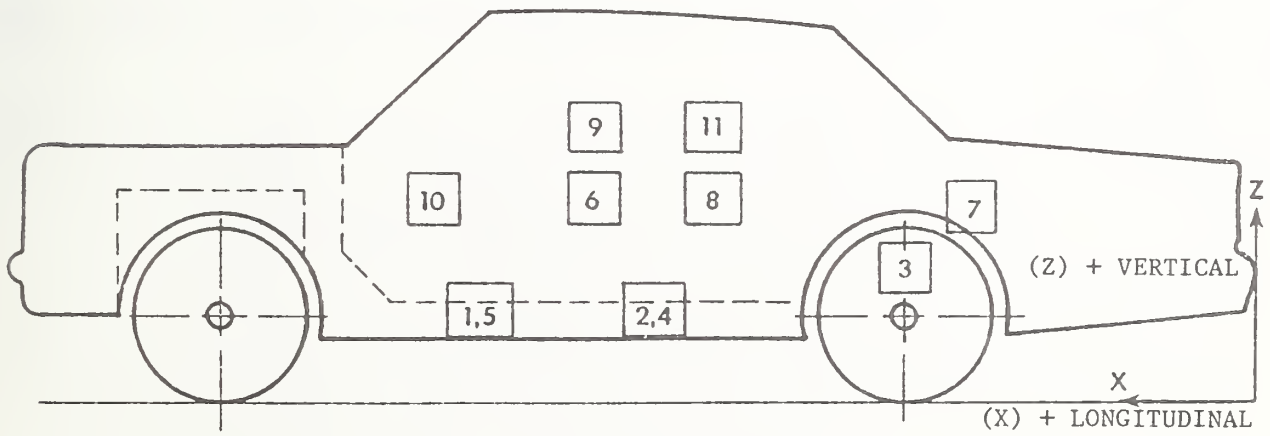
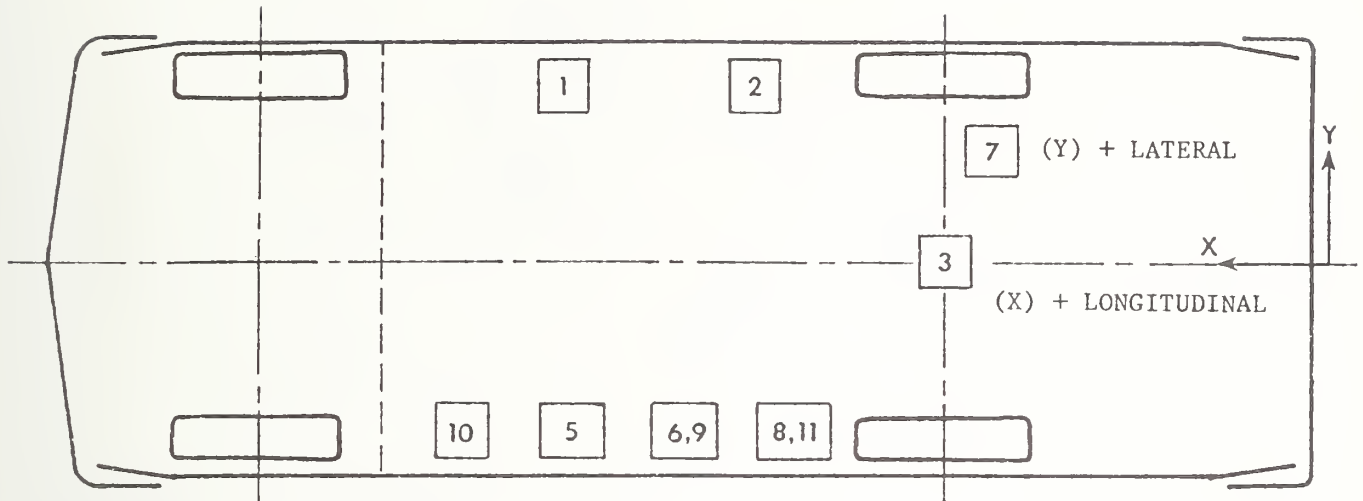
NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	RIGHT SILL AT FRONT SEAT	83.5	23.3	11.0				
	(LONGITUDINAL)	$\Delta V = -1.9 \text{ mph @ } 112.00 \text{ msec}$			5.12	55.25	7.83	13.13
	(LATERAL)	$\Delta V = 18.0 \text{ mph @ } 112.00 \text{ msec}$			31.27	25.00	2.78	71.63
	(VERTICAL)				11.70	19.75	9.01	24.13
	(RESULTANT)					32.30 @ 24.88		
2	RIGHT SILL AT REAR SEAT	61.6	23.8	9.0				
	(LONGITUDINAL)	$\Delta V = -0.4 \text{ mph @ } 112.00 \text{ msec}$			5.60	55.75	7.82	13.25
	(LATERAL)	$\Delta V = 20.8 \text{ mph @ } 112.00 \text{ msec}$			38.94	27.00	3.04	94.25
	(VERTICAL)				8.46	19.63	11.35	75.63
	(RESULTANT)					39.03 @ 27.00		
3	REAR DECK OVER AXLE	32.0	0.0	7.8				
	(LONGITUDINAL)	$\Delta V = -2.4 \text{ mph @ } 112.00 \text{ msec}$			7.04	29.25	9.73	19.38
	(LATERAL)	$\Delta V = 25.5 \text{ mph @ } 112.00 \text{ msec}$			36.14	43.13	3.99	96.13
	(VERTICAL)				9.49	31.38	8.33	65.25
	(RESULTANT)					37.09 @ 43.13		
4	LEFT SILL AT REAR SEAT	62.2	-23.6	9.8				
	(LATERAL)	$\Delta V = 14.2 \text{ mph @ } 22.50 \text{ msec}$			104.74	15.38	57.99	29.25
5	LEFT SILL AT FRONT SEAT	83.5	-23.4	11.3				
	(LATERAL)	$\Delta V = -3.7 \text{ mph @ } 41.25 \text{ msec}$			15.29	16.50	28.54	12.25
6	LEFT FRONT DOOR CENTERLINE	80.5	-25.8	23.6				
	(LATERAL)	$\Delta V = 30.7 \text{ mph @ } 15.13 \text{ msec}$			224.44	13.13	86.06	20.25
7	RIGHT REAR COMPARTMENT	31.0	15.2	15.0				
	(LONGITUDINAL)				5.30	26.50	7.05	20.63
8	MIDREAR OF LEFT FRONT DOOR	60.8	-25.9	24.2				
	(LATERAL)	$\Delta V = 31.7 \text{ mph @ } 13.13 \text{ msec}$			157.91	7.88	77.32	20.25
9	UPPER LEFT FRONT DOOR CENTERLINE	81.7	-25.9	33.1				
	(LATERAL)	$\Delta V = 23.3 \text{ mph @ } 14.75 \text{ msec}^\dagger$			242.31	15.88	142.73	28.50
10	MIDFRONT OF LEFT FRONT DOOR	99.1	-25.8	22.4				
	(LATERAL)	$\Delta V = 19.6 \text{ mph @ } 11.50 \text{ msec}$			106.72	8.13	53.19	17.75
11	UPPER REAR OF LEFT REAR DOOR	70.8	-25.6	33.1				
	(LATERAL)	$\Delta V = 36.3 \text{ mph @ } 16.13 \text{ msec}$			242.65	16.63	187.62	23.38

* Reference: X - Rear Bumper (+ Forward), Y - Vehicle Centerline (+ To Right),
Z - Ground Level (+ Up)

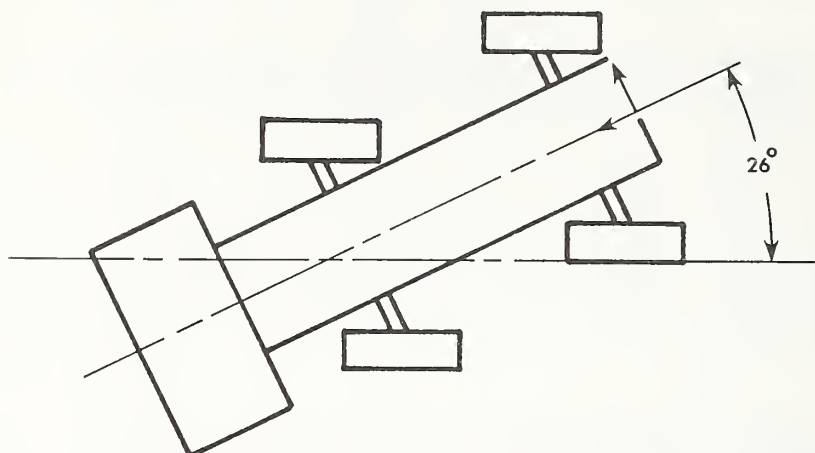
All measurements of accelerometer locations in inches.

[†] This Delta V appears unrealistic

VEHICLE ACCELEROMETER LOCATIONS



MOVING BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY



NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	CENTER OF GRAVITY	74.5	0.0	11.5				
	(LONGITUDINAL)	$\Delta V = -20.8 \text{ mph @ } 112.00 \text{ msec}$			---	---	21.99	36.13
	(LATERAL)	$\Delta V = -3.5 \text{ mph @ } 112.00 \text{ msec}$			3.01	73.00	9.05	39.88
	(VERTICAL)				27.71	51.13	15.26	63.25
	(RESULTANT)					30.26 @	51.00	
2	FRONT FRAME MEMBER	130.3	0.0	11.3				
	(LONGITUDINAL)	$\Delta V = -19.1 \text{ mph @ } 112.00 \text{ msec}$			---	---	19.98	37.38
3	REAR FRAME MEMBER	23.3	0.0	11.5				
	(LONGITUDINAL)	$\Delta V = -15.8 \text{ mph @ } 112.00 \text{ msec}$			1.92	95.88	19.24	35.88

* Reference: X - Rear Most Point of Frame (+ To Forward), Y - Barrier Centerline (+ To Right), Z - Ground Level (+ To Up)

All measurements of accelerometer locations in inches.

^x No positive values in the time interval of interest.

HIGH SPEED CAMERA INFORMATION

CAMERA NO.	LOCATION	TYPE	LENS (mm)	SPEED (fps)	PURPOSE OF CAMERA DATA
1	Overhead	Photosonic 1B	8	457	Vehicle dynamics
2	Overhead	Photosonic 1B	25	500	Close-up of impact point
3	Onboard MDB	Photosonic 1B	25	500	Close-up of impact point
4	Onboard MDB	Photosonic 1B	13	498	Driver kinematics
5	Ground level right	Photosonic 1B	25	498	Overall view
6	Ground level left	Photosonic 1B	17	520	Overall view
7	Onboard vehicle	Photosonic 1B	8	808	Driver kinematics - front view
8	Onboard vehicle	Photosonic 1B	8	798	Driver kinematics
9	Onboard vehicle	Photosonic 1B	13	800	Passenger kinematics
10	Right	Kodak	25	24	Overall view

NOTE: CAMERAS ARE NUMBERED ACCORDING TO SPLICING SEQUENCE OF FILM.
 (24 fps) REAL TIME MOVIE FILM COVERAGE OF PRE-CRASH, POST-CRASH
 AND CRASH EVENT SPLICED AT START AND END OF FILM.

LOCATIONS OF OFFBOARD HIGH SPEED CAMERAS

CAMERA NO.	X	Y	Z
1	0	0	25'
2	0	0	25'
5	24'10"	58'8"	45"
6	-20'11"	-11'	45"

Origin of Coordinate System is Point of Impact

+X = Forward with Respect to Striking Vehicle's Velocity Vector
+Y = Rightward with Respect to Striking Vehicle's Velocity Vector
+Z = Upward with Respect to Striking Vehicle's Velocity Vector

NON-GOVERNMENT FURNISHED TRANSDUCER INFORMATION

PARAMETER BEING MEASURED	TYPE OF TRANSDUCER	MODEL NUMBER	SERIAL NUMBER	MEGR.	DATE OF LAST CALIBRATION	SENSITIVITY	DESIRED FULL SCALE (ENGR. UNITS)
BCGXG	Accel	4-202-0001	18845	Bell Howell	11/8/84	0.237 MV/G	50 G
BCGYG	Accel	4-202-0001	18858	Bell Howell	11/8/84	0.238 MV/G	50 G
BCGZG	Accel	4-202-0001	18857	Bell Howell	11/8/84	0.240 MV/G	50 G
BFCXG	Accel	4-202-0001	18240	Bell Howell	11/8/84	0.239 MV/G	50 G
BRCXG	Accel	4-202-0001	19022	Bell Howell	11/8/84	0.220 MV/G	50 G

All dummy and struck vehicle accelerometers were Government Furnished Equipment and were Endevco 2264 Accelerometers.

APPENDIX A
PHOTOGRAPHS



Figure A-1. PRE-TEST OVERALL - VIEW 1

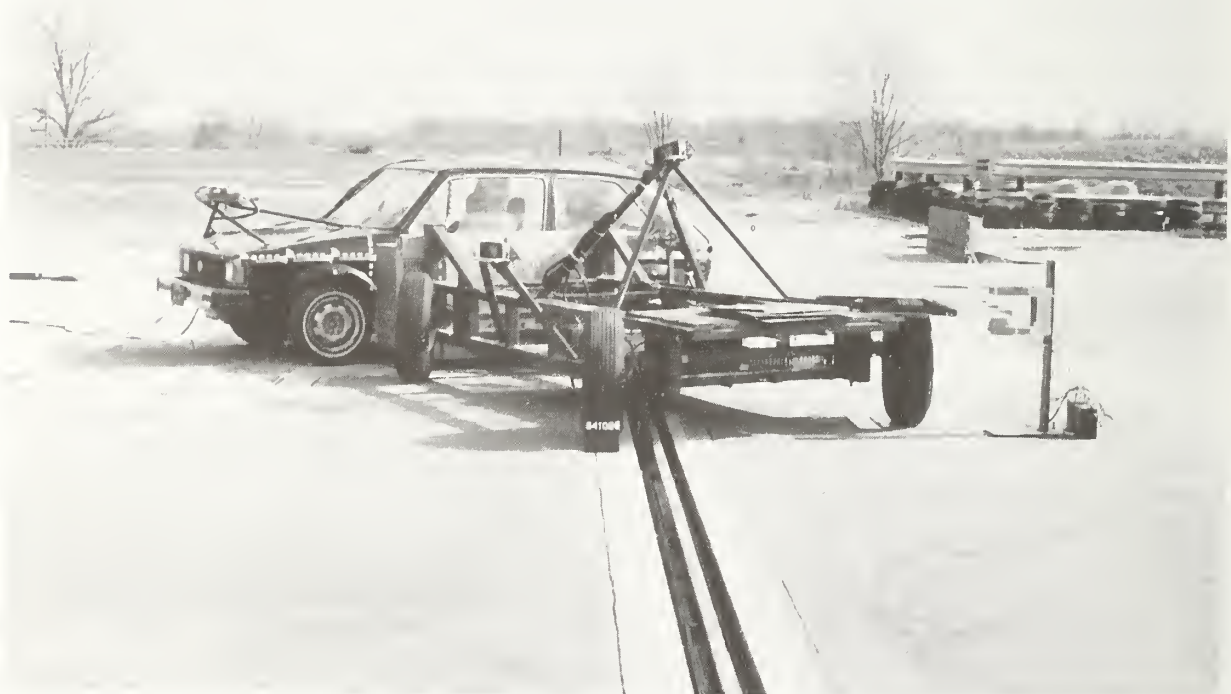


Figure A-2. PRE-TEST OVERALL VIEW 2
A 2



Figure A-3. PRE-TEST OVERALL - VIEW 3



Figure A-4. PRE-TEST OVERALL - VIEW 4
A-3

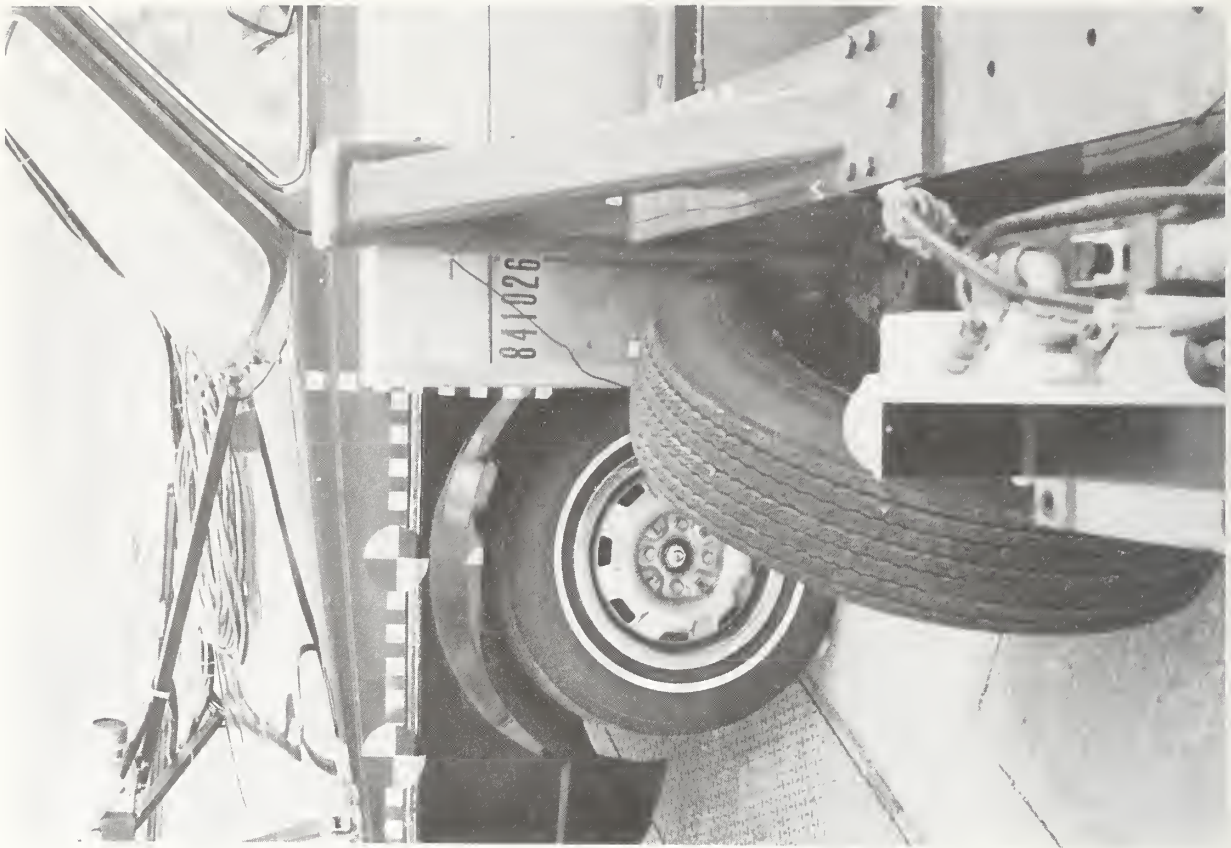


Figure A-5. PRE-TEST CLOSEUP - VIEW 1



Figure A-6. PRE-TEST CLOSEUP - VIEW 2
A-4



Figure A-7. PRE-TEST MODIFIED WINDOW



Figure A-8. PRE-TEST DRIVER DUMMY - VIEW 1
A-5



Figure A-9. PRE-TEST DRIVER DUMMY - VIEW 2



Figure A-10. PRE-TEST PASSENGER DUMMY VIEW 1
A-6

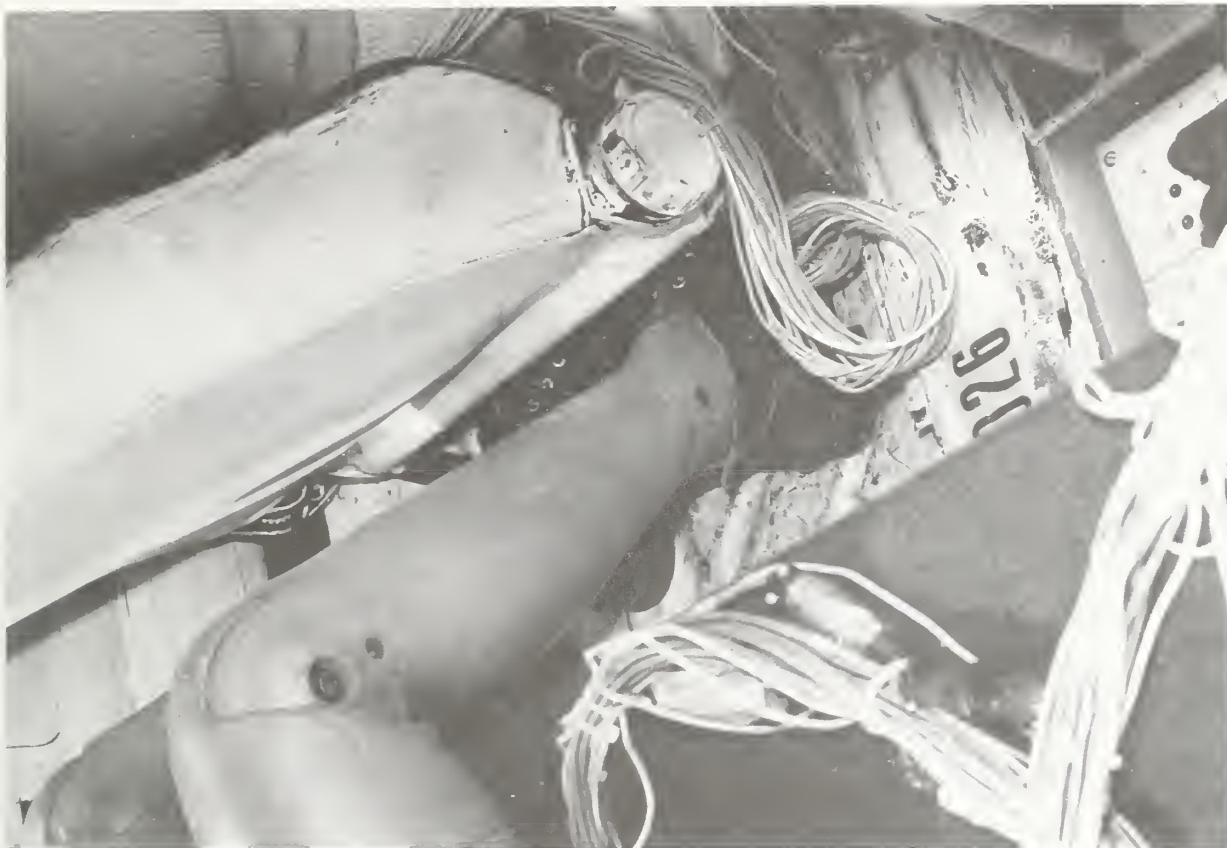


Figure A-11. PRE-TEST PASSENGER DUMMY - VIEW 2



Figure A-12. PRE-TEST DUMMIES OVERALL
A-7

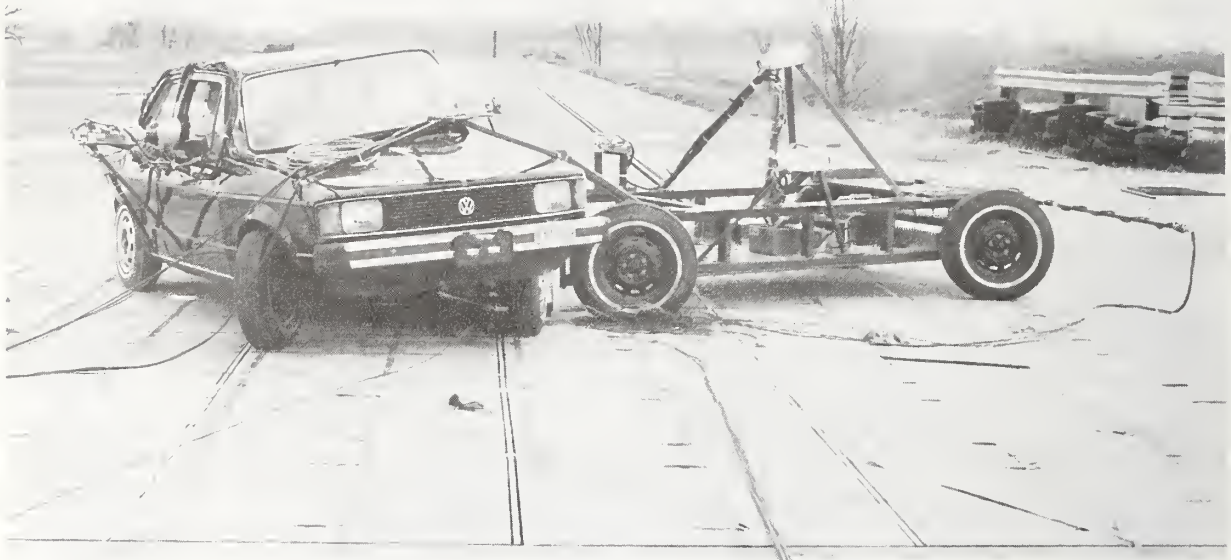


Figure A-13. POST-TEST OVERALL - VIEW 1

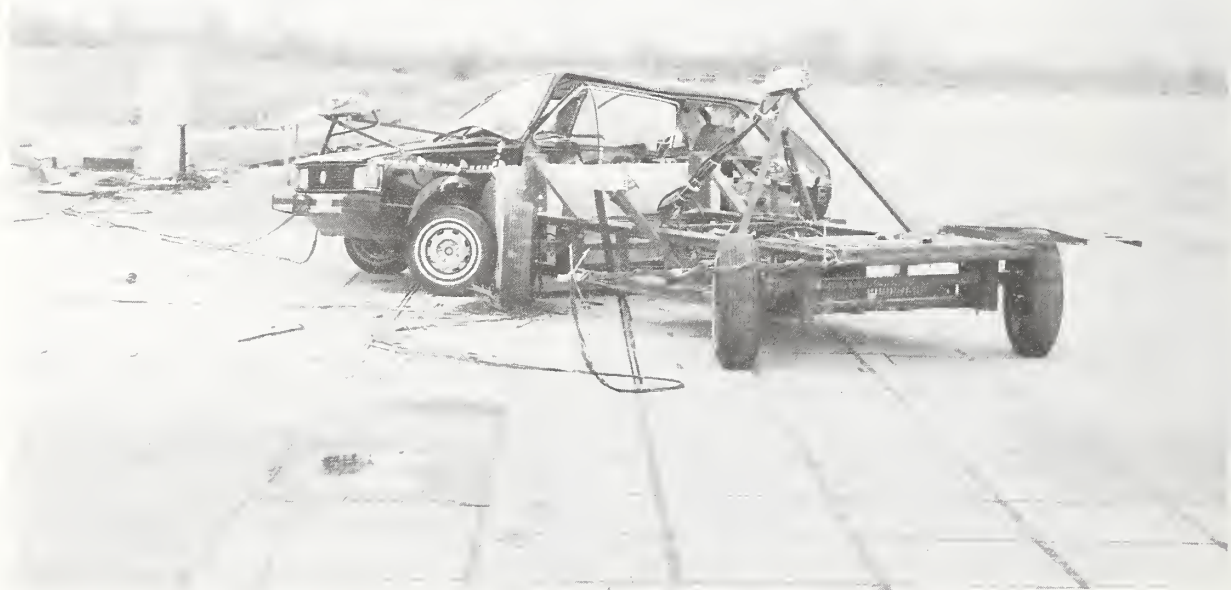


Figure A-14. POST-TEST OVERALL - VIEW 2



Figure A-15. POST-TEST OVERALL - VIEW 3



Figure A-16. POST-TEST OVERALL - VIEW 4
A-9



Figure A-17. POST-TEST DRIVER DUMMY - VIEW 1

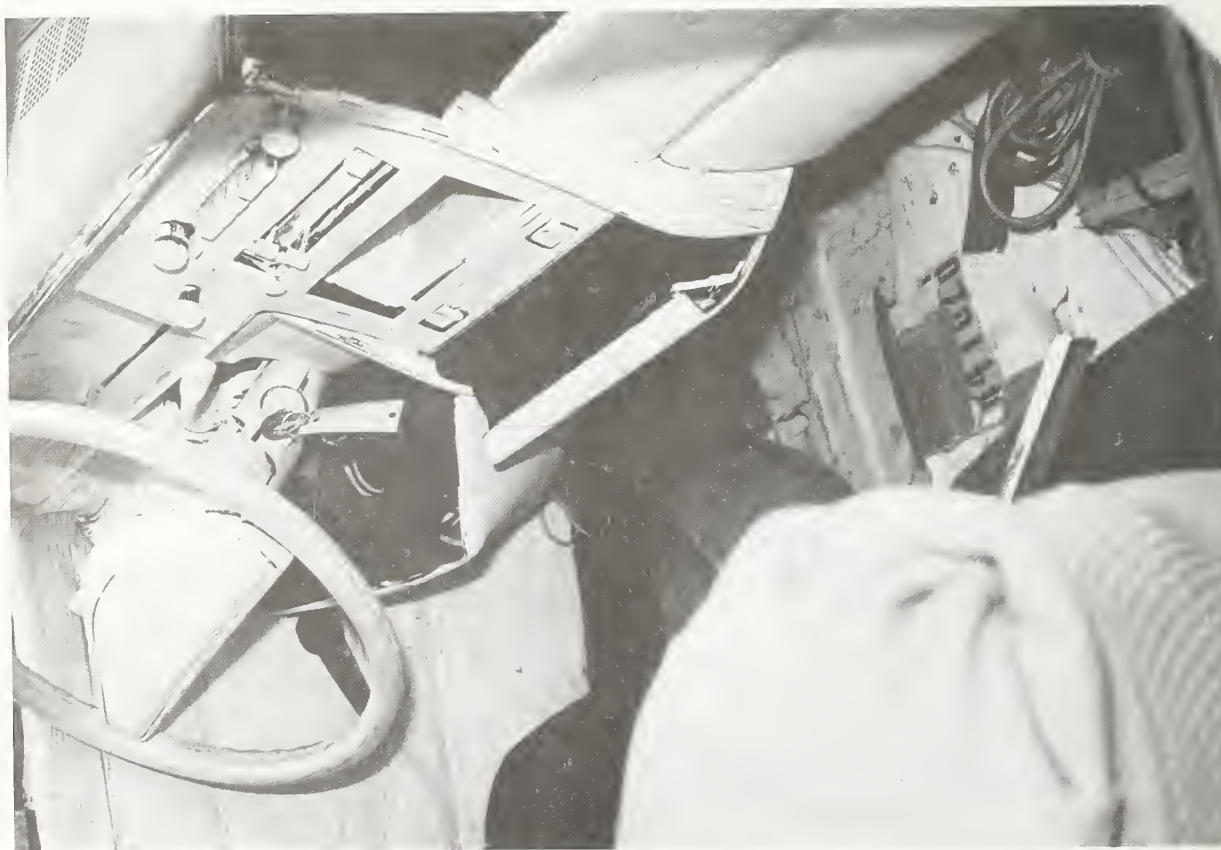


Figure A-18. POST-TEST DRIVER DUMMY - VIEW 2
A-10



Figure A-19. POST-TEST PASSENGER DUMMY -- VIEW 1

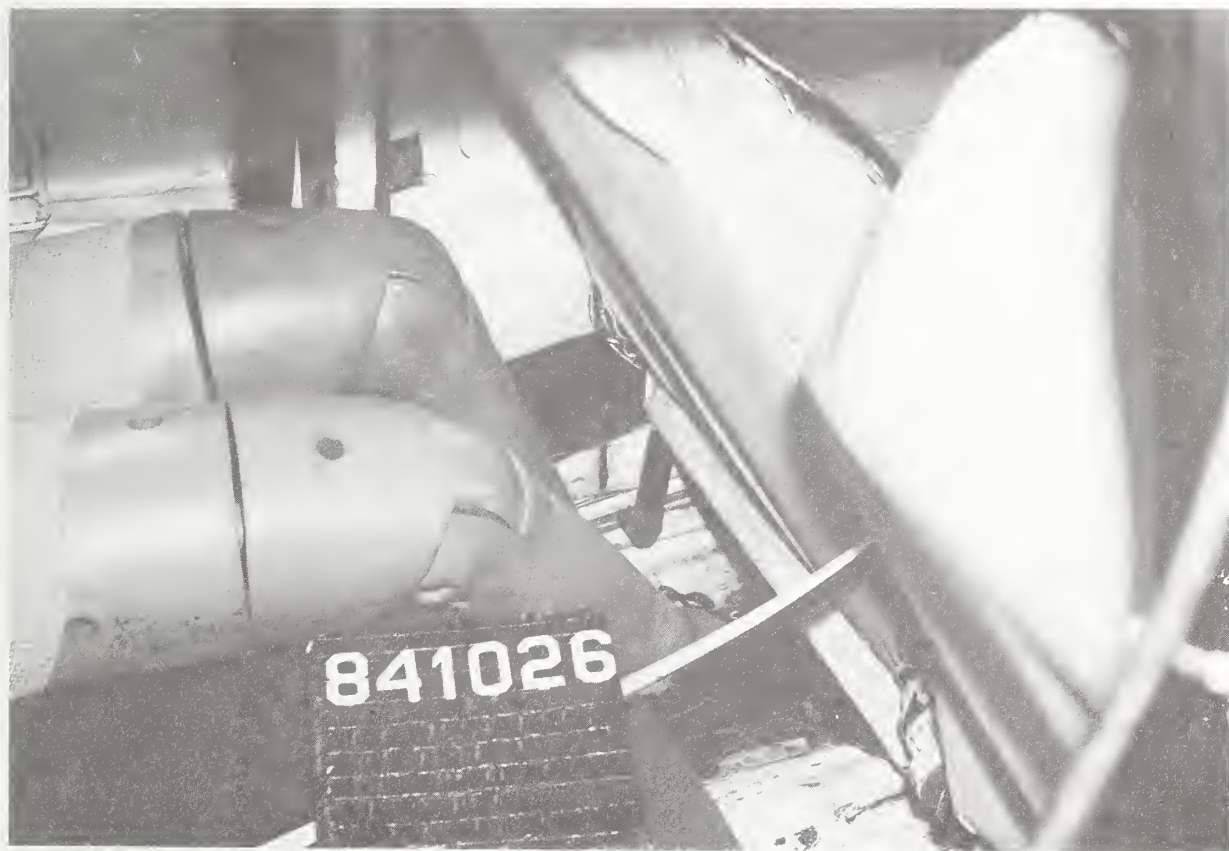


Figure A-20. POST-TEST PASSENGER DUMMY - VIEW 2



Figure A-21. POST-TEST DUMMIES OVERALL

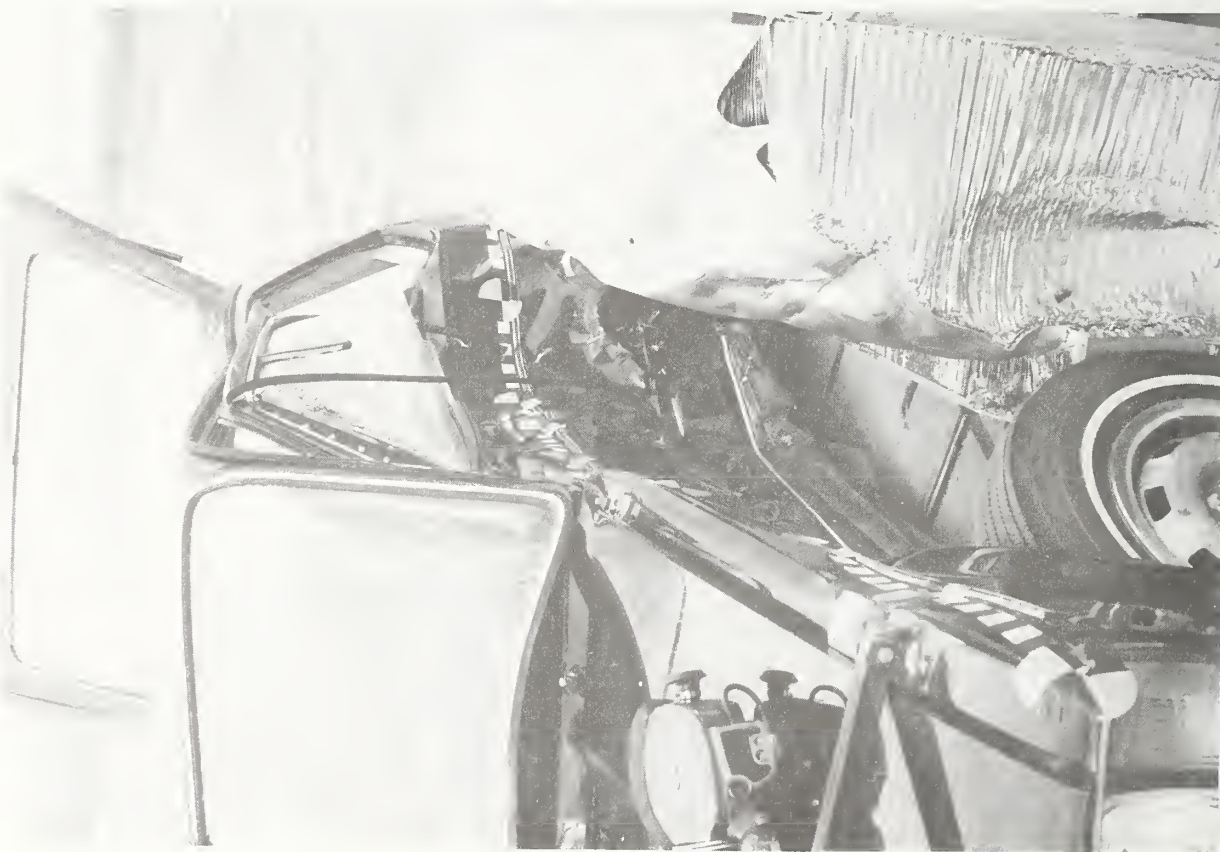


Figure A-22. POST-TEST VEHICLE DAMAGE -- VIEW 1
A-12

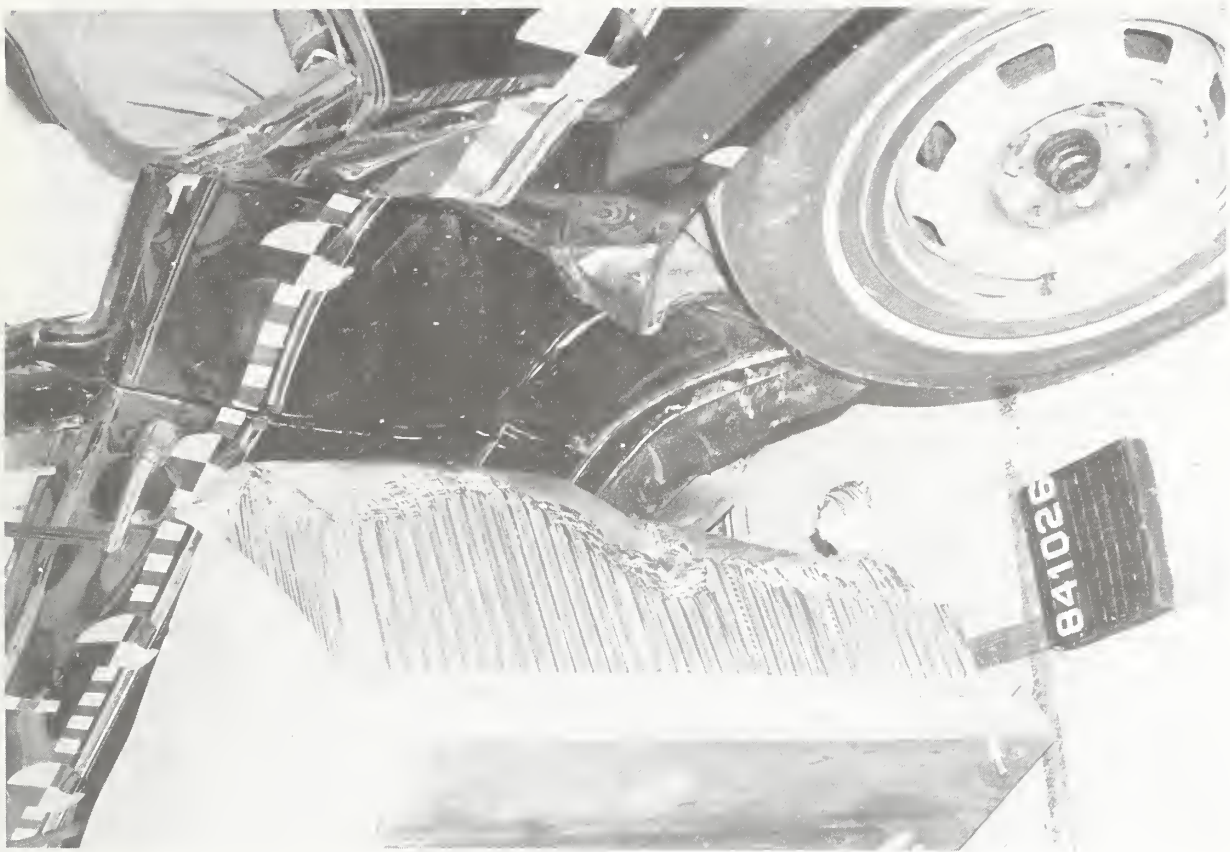


Figure A-23. POST-TEST VEHICLE DAMAGE ~ VIEW 2



Figure A-24. POST-TEST MODIFIED WINDOW
A-13



Figure A-25. PRE-TEST MDB FACE -- VIEW 1

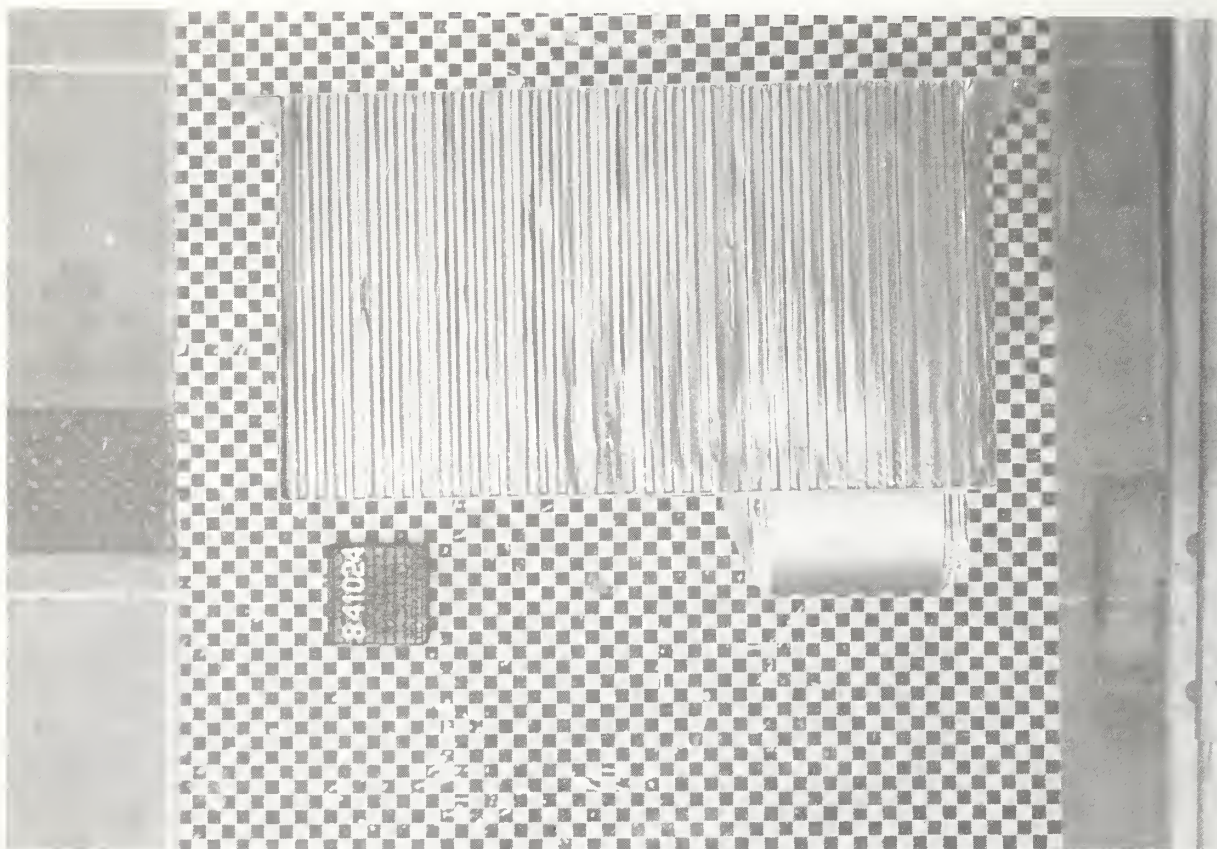


Figure A-26. PRE-TEST MDB FACE -- VIEW 2

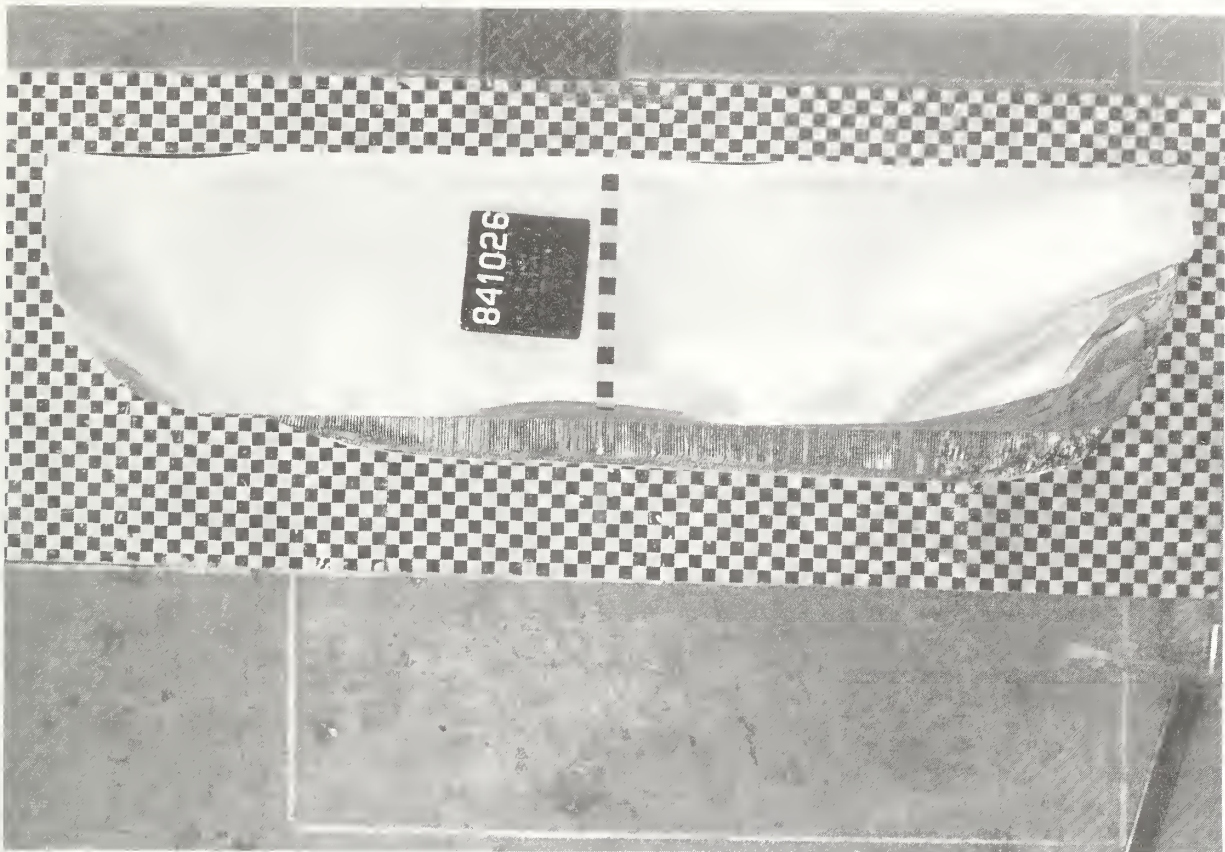


Figure A-27. POST-TEST MDB FACE -- VIEW 1

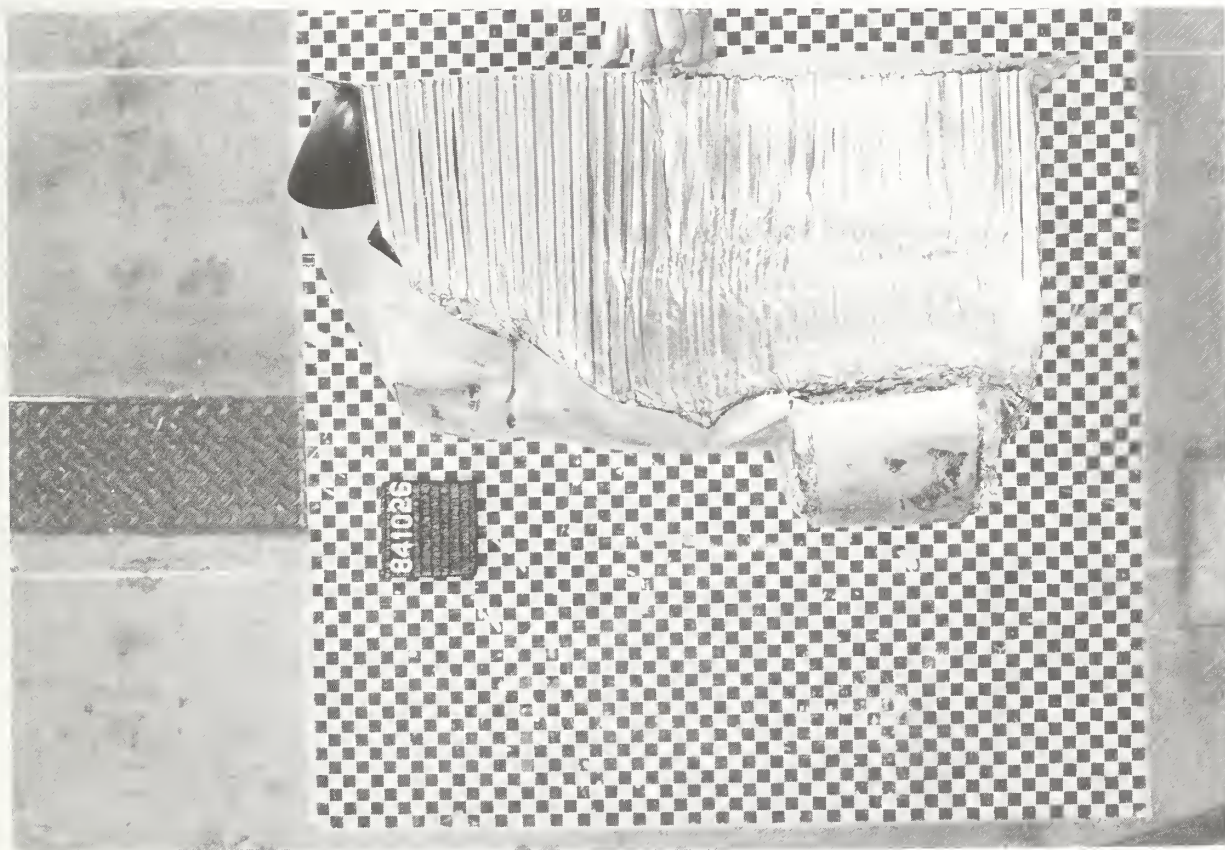


Figure A-28. POST-TEST MDB FACE -- VIEW 2
A-15

APPENDIX B
DATA PLOT PRESENTATION

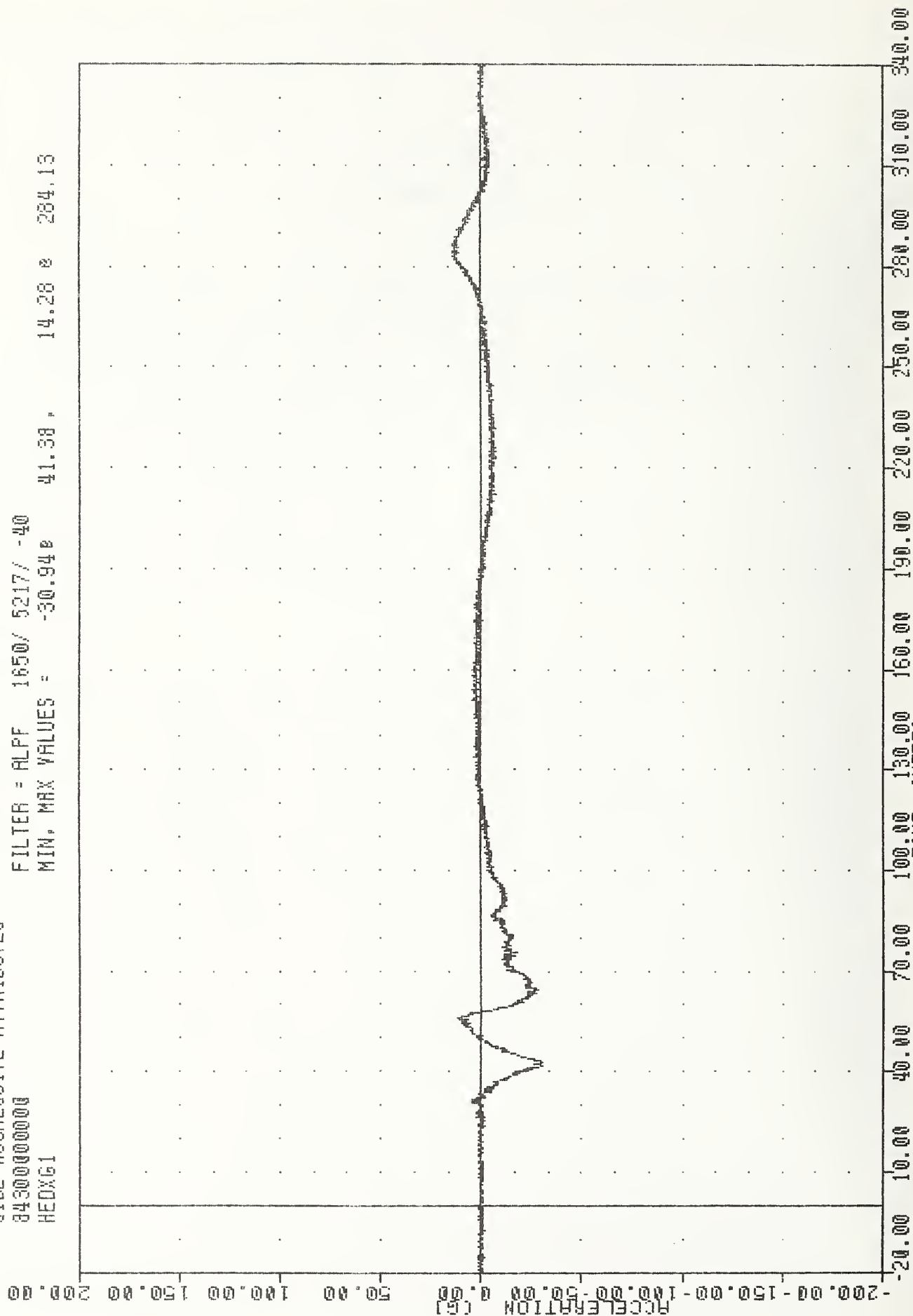
Data plots generated from the crash test data are presented on the following pages. All data are recorded on magnetic tape for inclusion in the NHTSA crash test data base system. The data was filtered according to SAE J211, except dummy thorax data which was filtered using the HSRI filter.

TRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 HEDXG1

PILOT DATE 7-NOV-84 16:02:06

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -30.94e 41.38e 14.28e 284.13



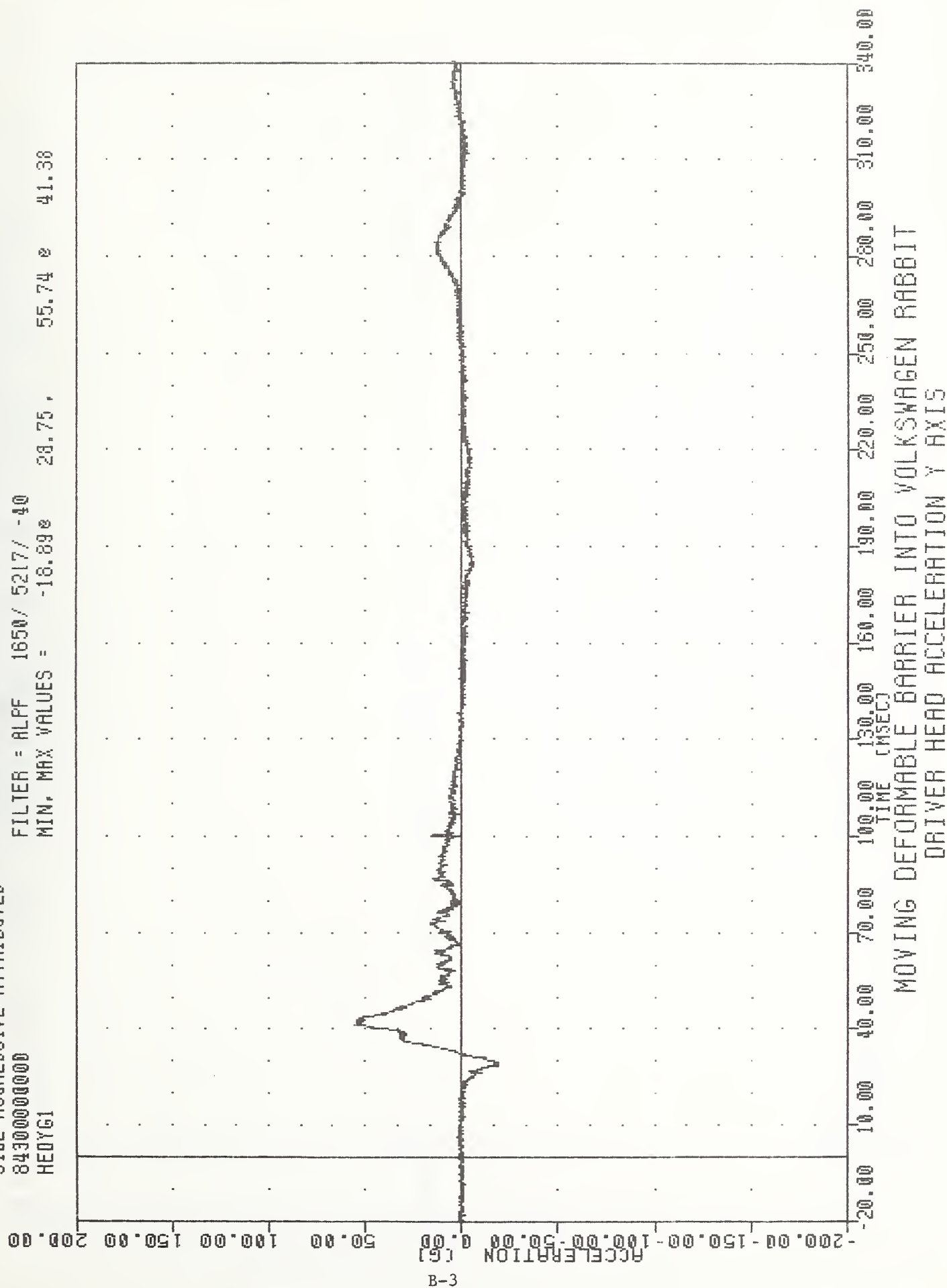
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER HEAD ACCELERATION X AXIS

THL , 841020
SIDE AGGRESSIVE ATTRIBUTES
843000000000
HE0YG1

PLOT DATE 1-NOV-84 16:02:05

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -18.89e 28.75 , 55.74 e 41.38



SRC 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 HEDZ61

FLUI DATE 1-NOV-84 16:02:06

843000000000

FILTER = ALPF 1650 / 5217 / -40

MIN. MAX VALUES = -85.32 59.50 14.63 27.13

200.00

150.00

100.00

50.00

0.00

-50.00

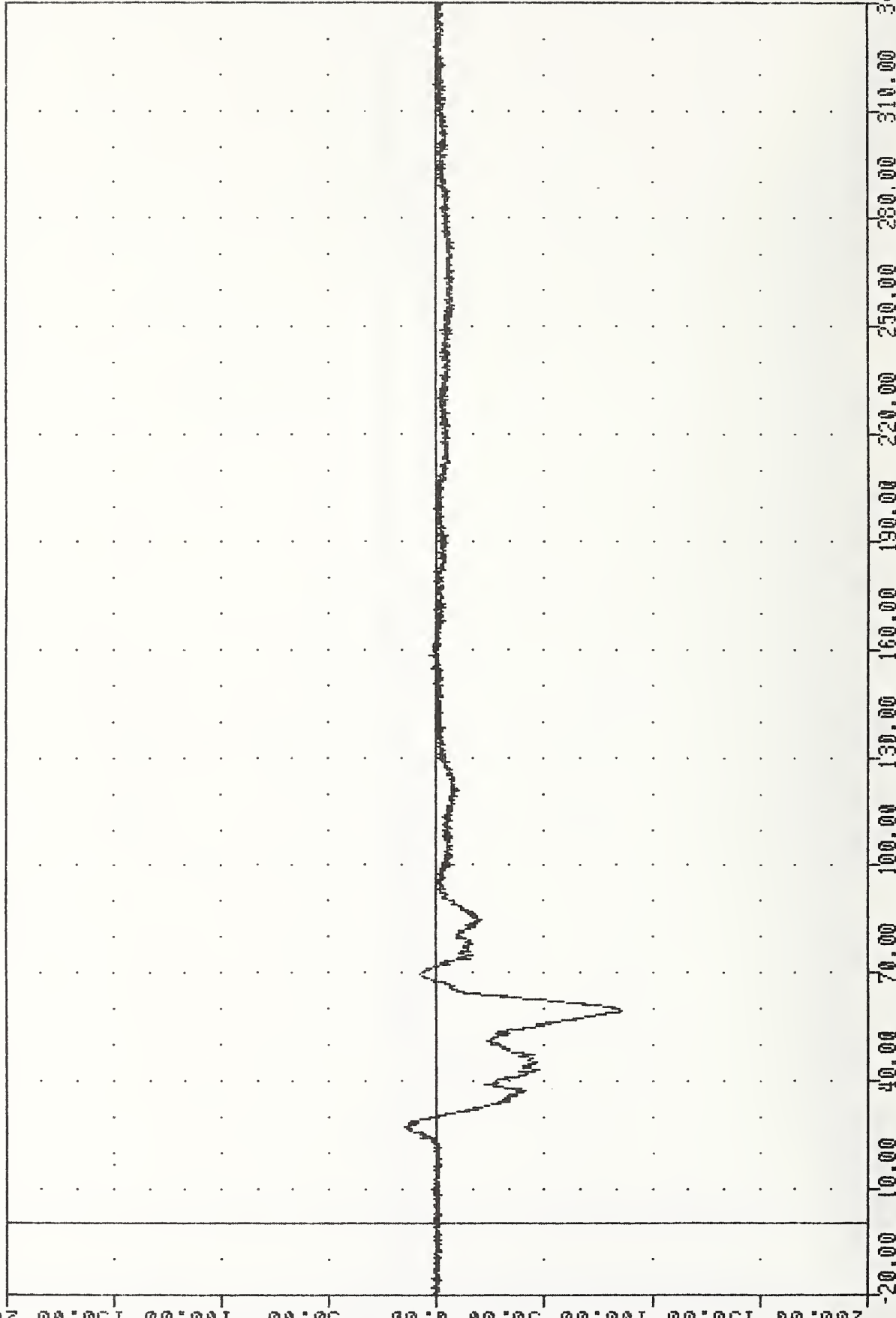
-100.00

-150.00

-200.00

B-4

ACCELERATION (G)



TIME (msec)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER HEAD ACCELERATION Z AXIS

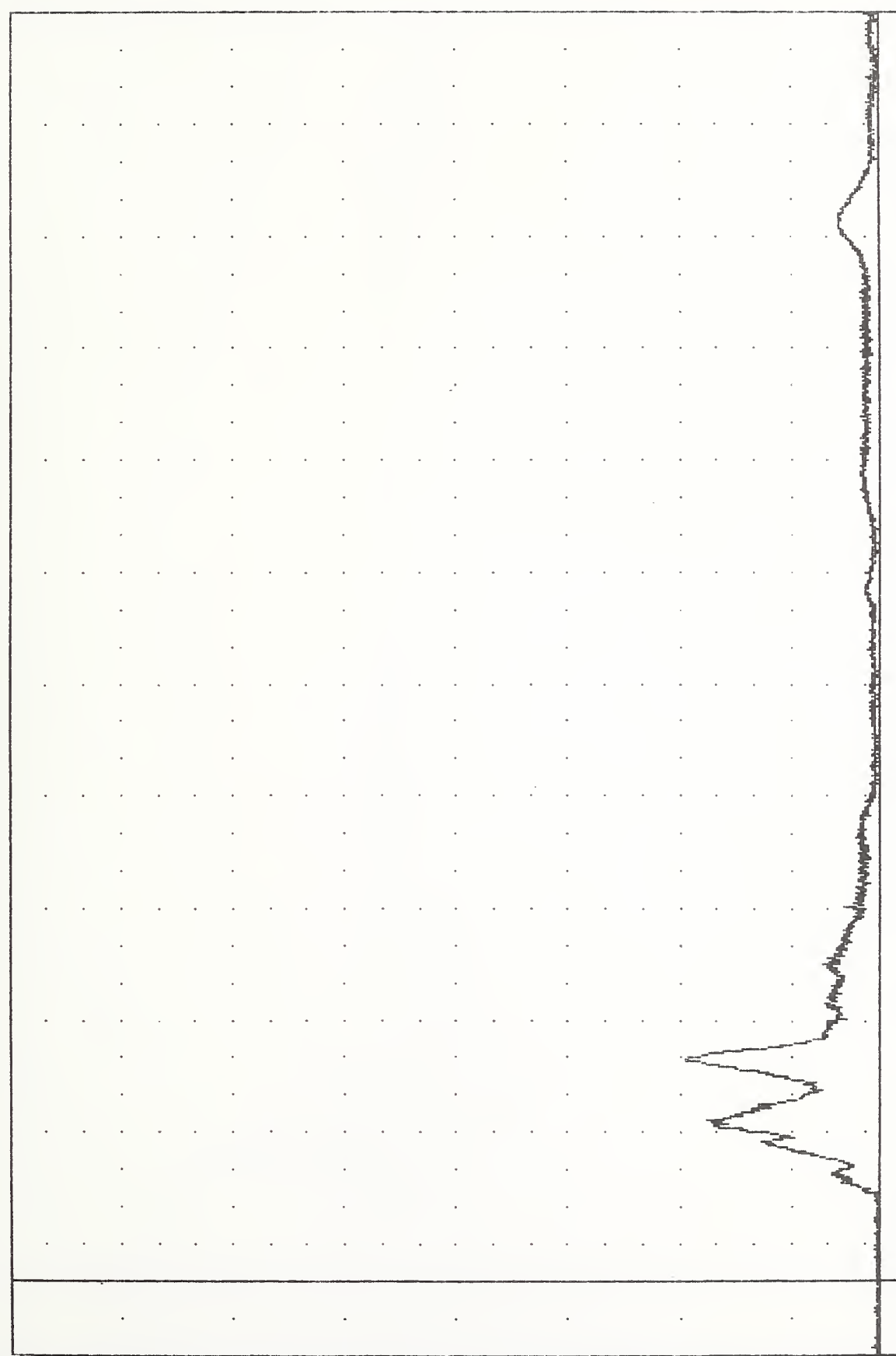
TRC
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 HEDRG1

PLOT DATE 1-NDV-84 16:02:00b

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = 0.130 -0.88 87.49 59.50

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

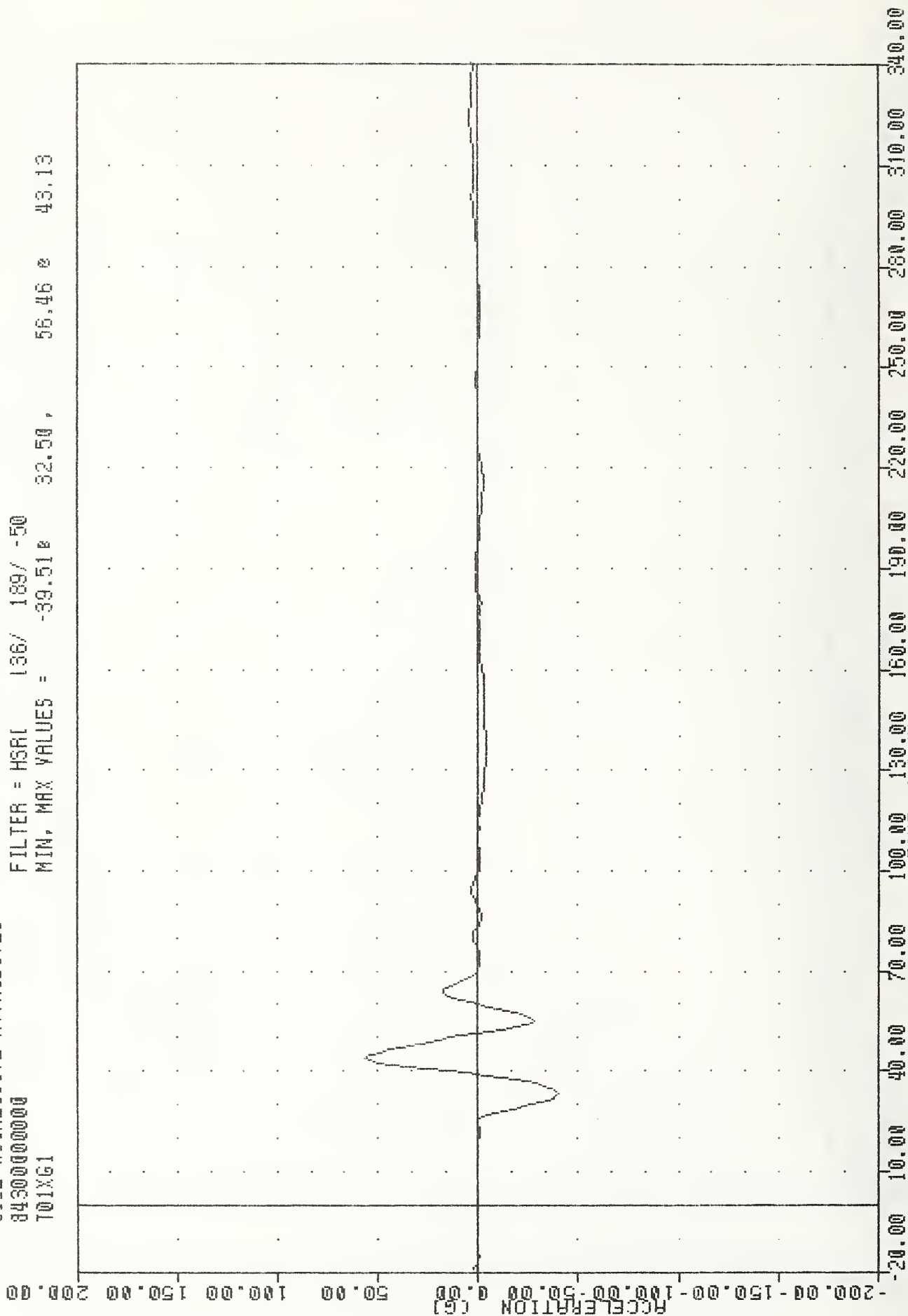
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER HEAD RESULTANT

IRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T01XG1

PLOT DATE 1-NOV-84 16:03:24

FILTER = HSR1 136/ 189/ -50

MIN, MAX VALUES = -39.51g 32.50g 56.46g 43.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER UPPER SPINE ACCELERATION X AXIS

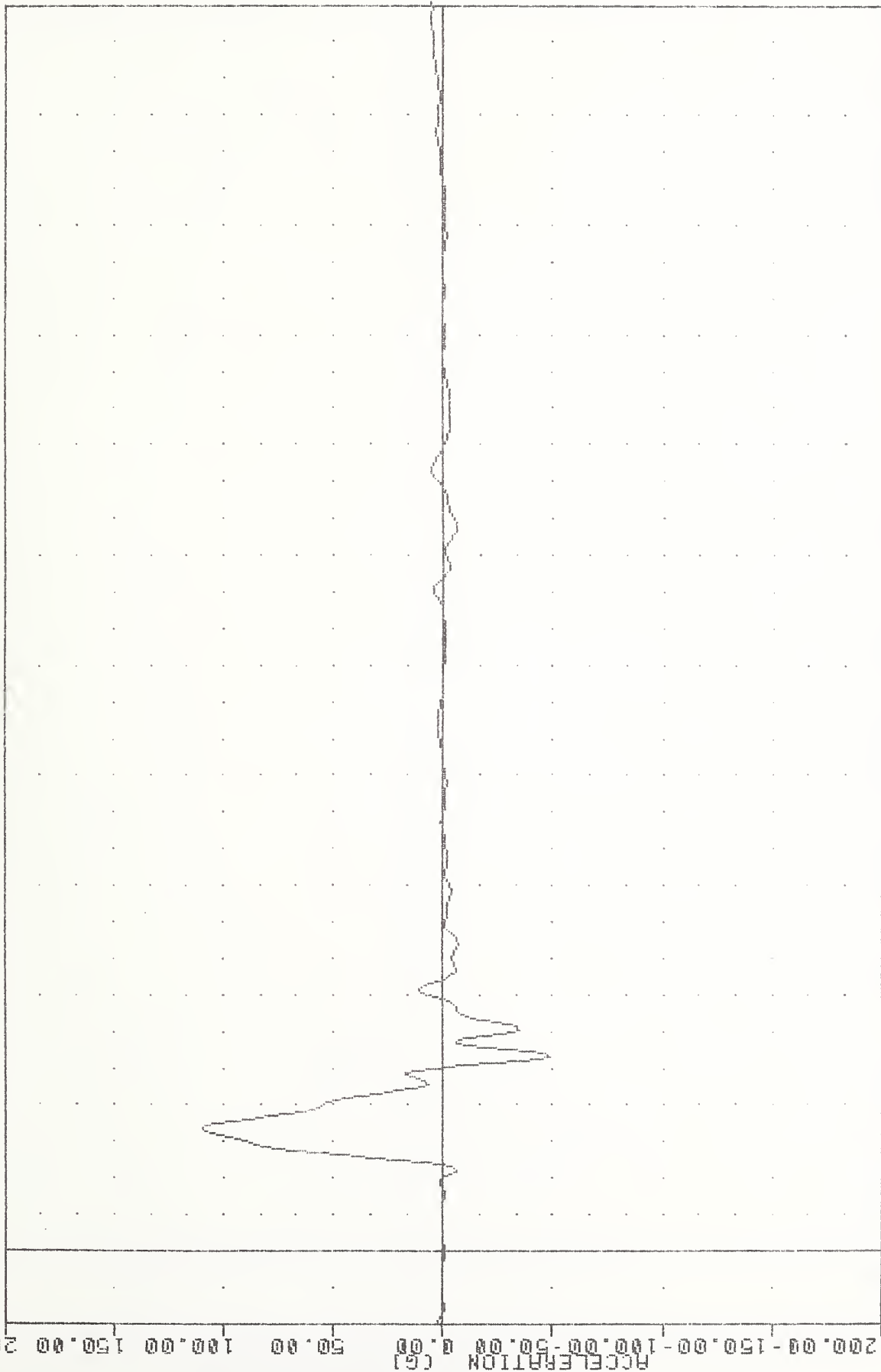
TRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T01Y61

PLUI DHIE 1-NOV-84 16:03:24

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -48.40e 52.50, 109.89 e 33.13

200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER UPPER SPINE ACCELERATION Y AXIS

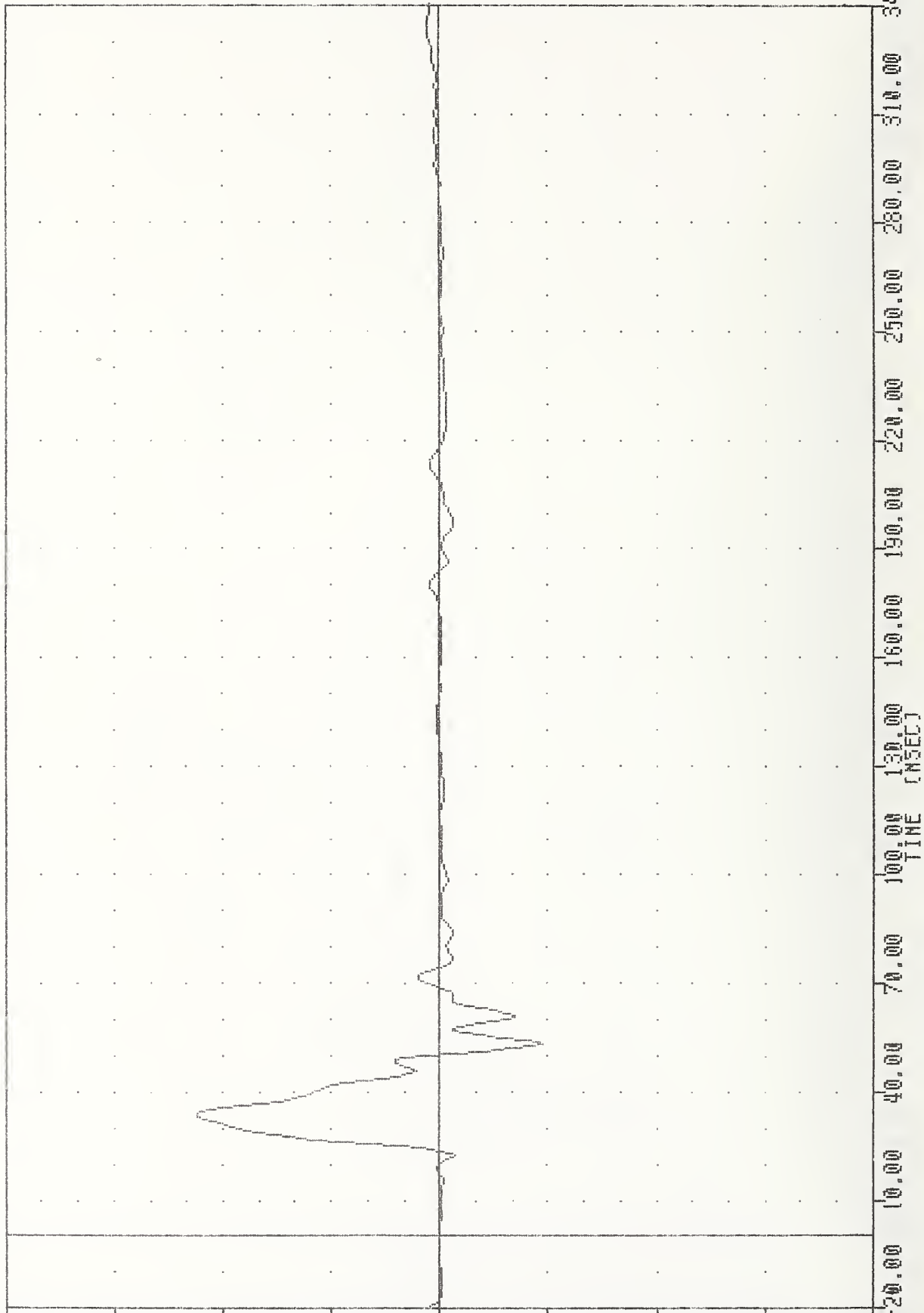
IAC , 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
T01Y6A

PLOT DATE 1-NOV-84 16:03:24

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -47.18 52.50 112.11 33.13

ACCELERATION (G)



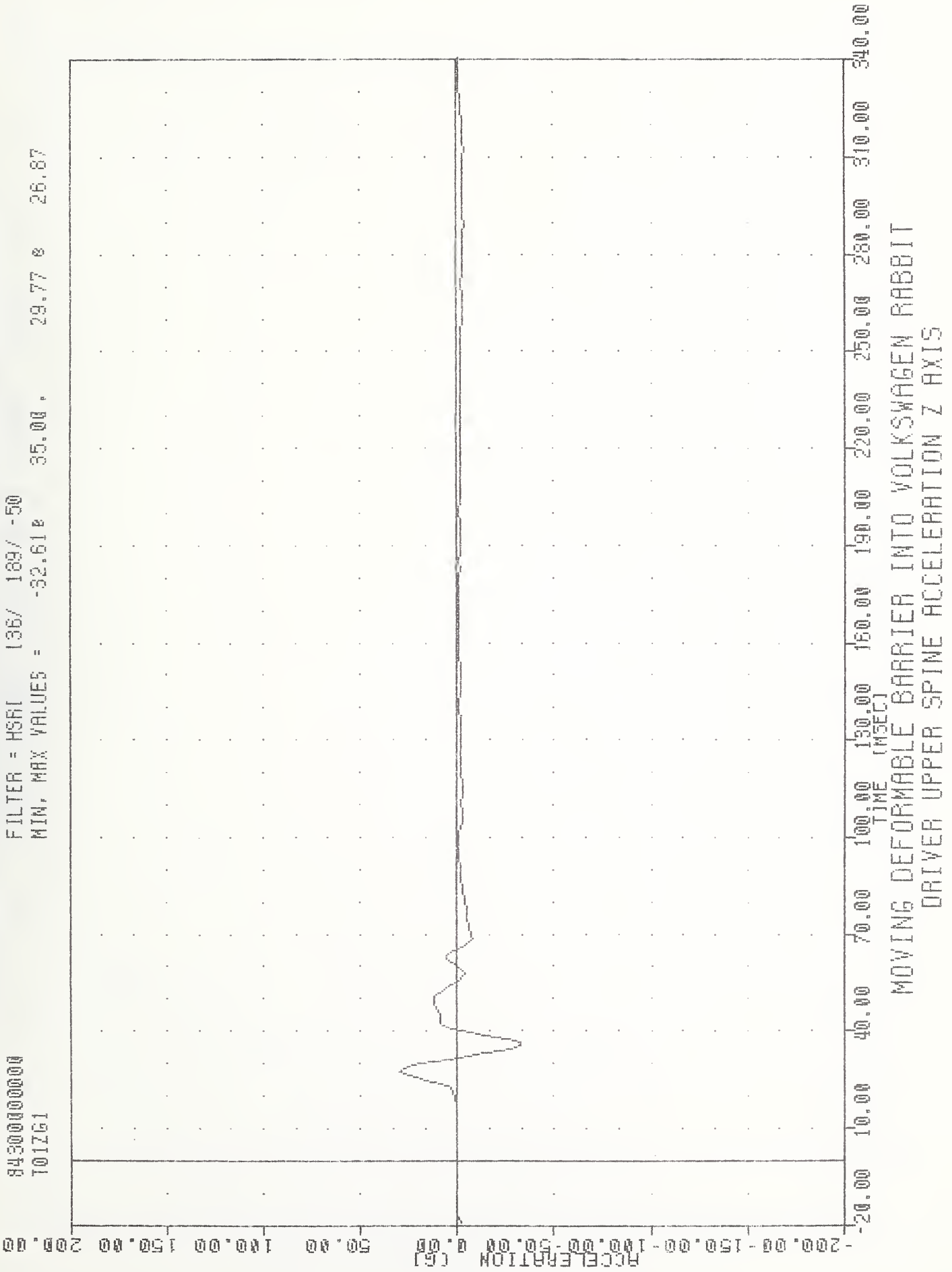
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE ACCELERATION -2 Y AXIS

TRC , 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
T01ZG1

PLOT DATE 1-NOV-84 16:03:24

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -32.61 35.00 29.77 26.87



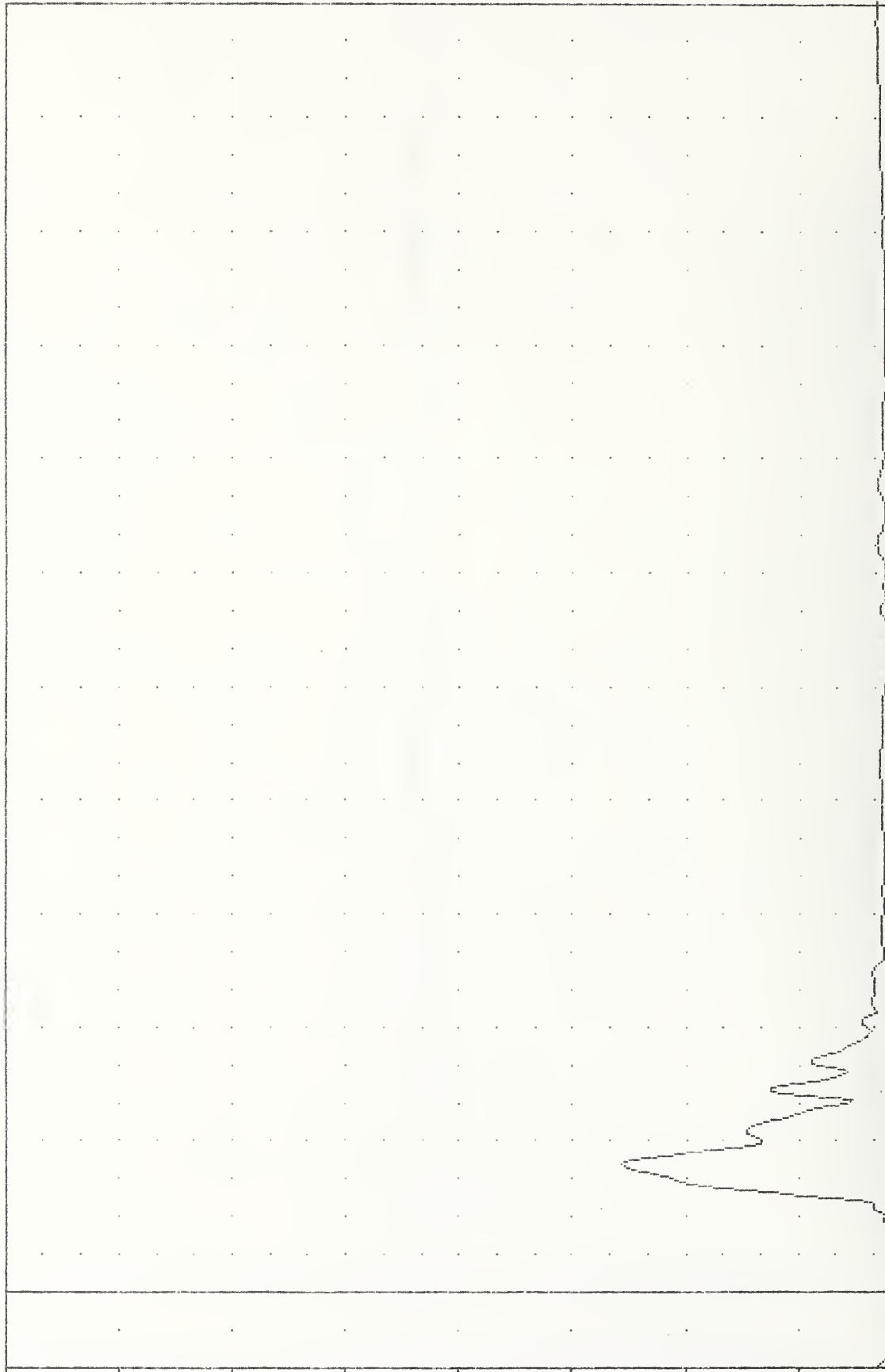
IHC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T01R61

FLUI DATE 1-NOV-84 16:03:24

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.100 -11.25, 118.66 0 33.13

ACCELERATION (G)

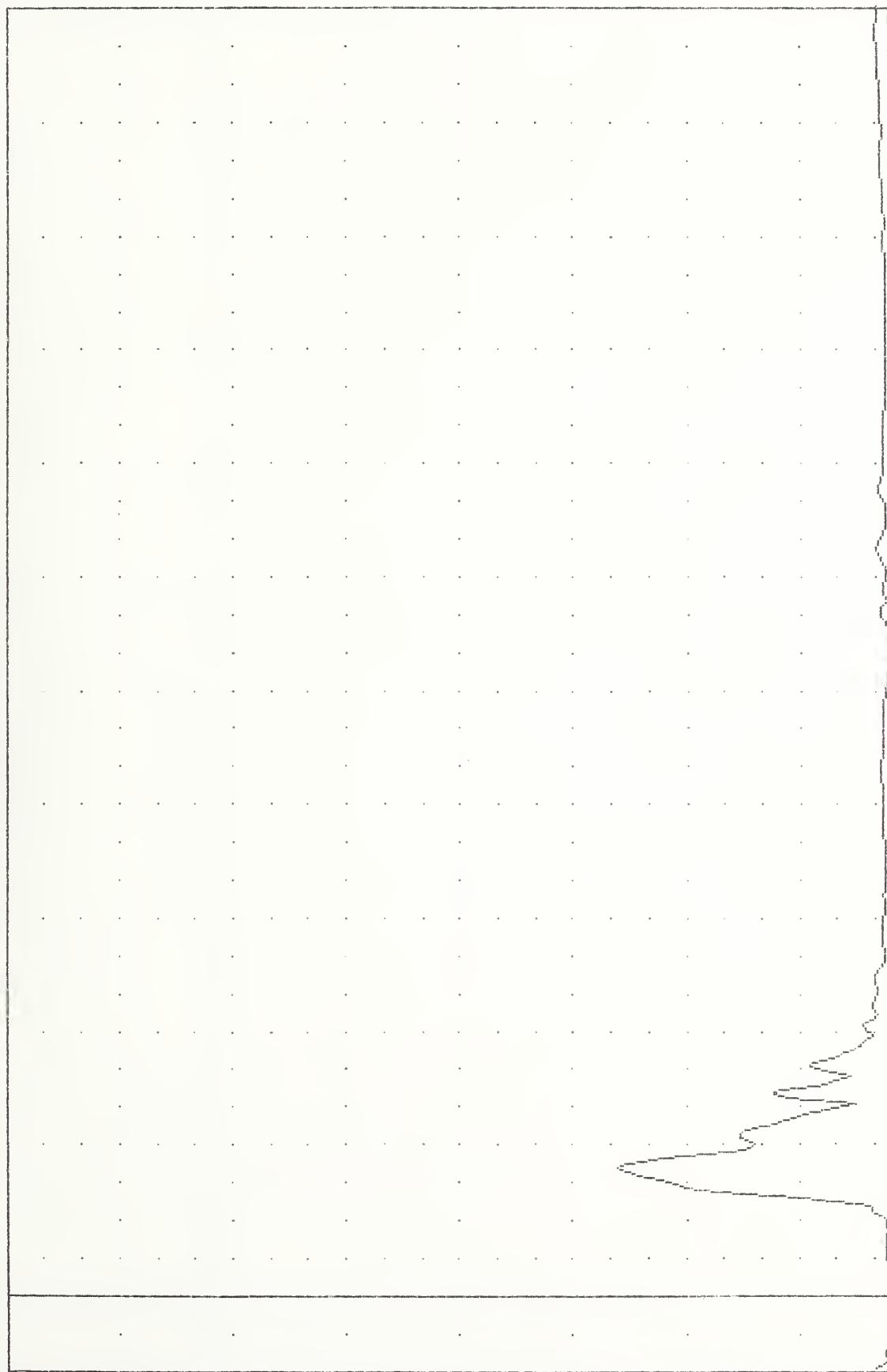


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER UPPER SPINE RESULTANT

TRC , 84102b
 SIDE AGGRESSIVE ATTRIBUTES
 84300000000
 T01RGA

PLU1 UH1E 1-NOV-84 16:04:53
 FILTER = HSR1 136/ 189/ -50
 MIN. MAX VALUES = 0.14e 0.00, 120.71 e 33.13

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER UPPER SPINE RESULTANT USING T01YGA

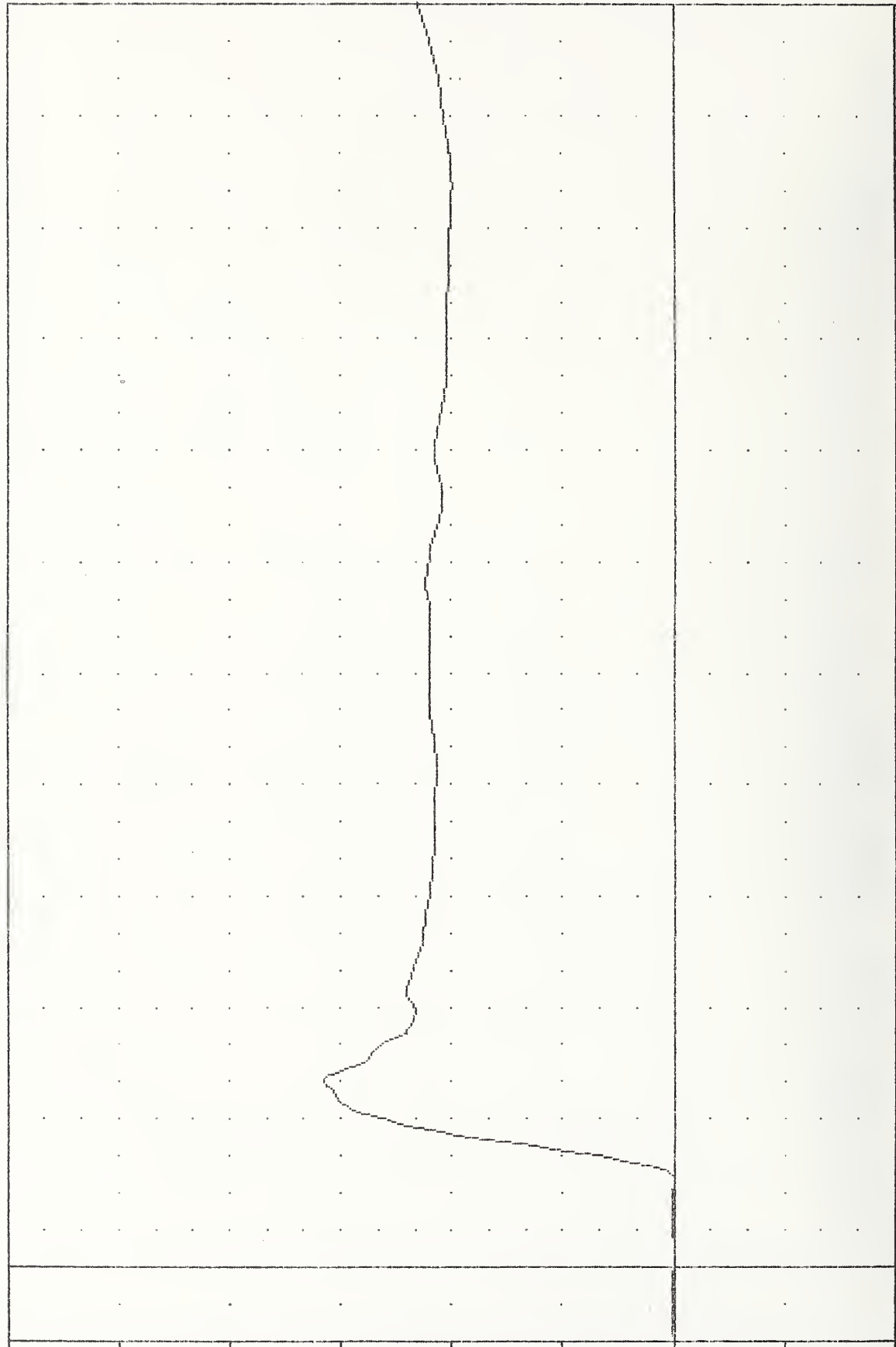
TRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 84300000000
 T01YV1

PLUT DATE 1-NDV-84 16:05:10

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.180 23.13, 31.50 0 49.37

VELOCITY (MPH)



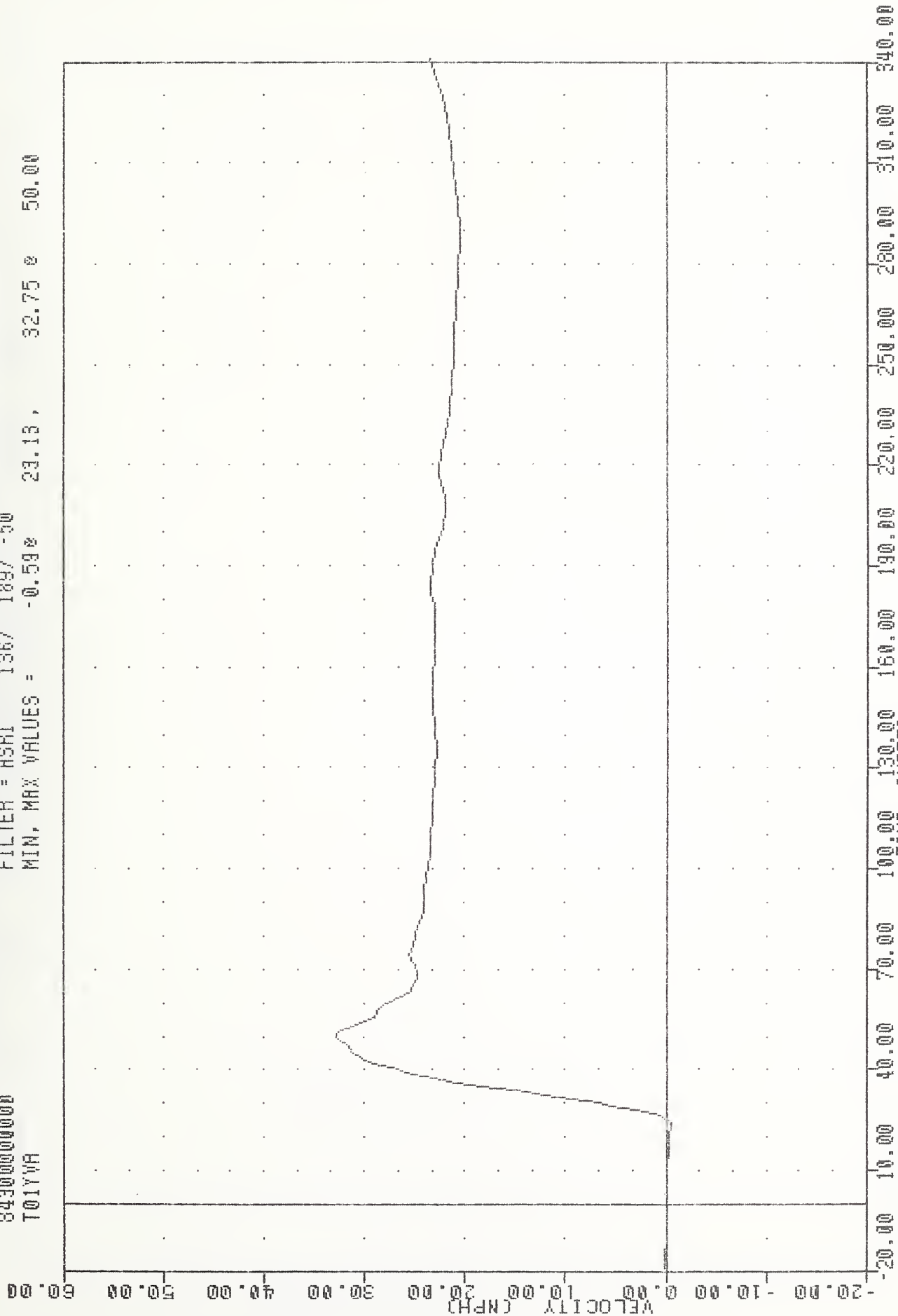
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T01YGI

THC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T01YVA

PLU1 UR1E 1-NOV-84 16:05:10

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.598 23.13, 32.75 50.00



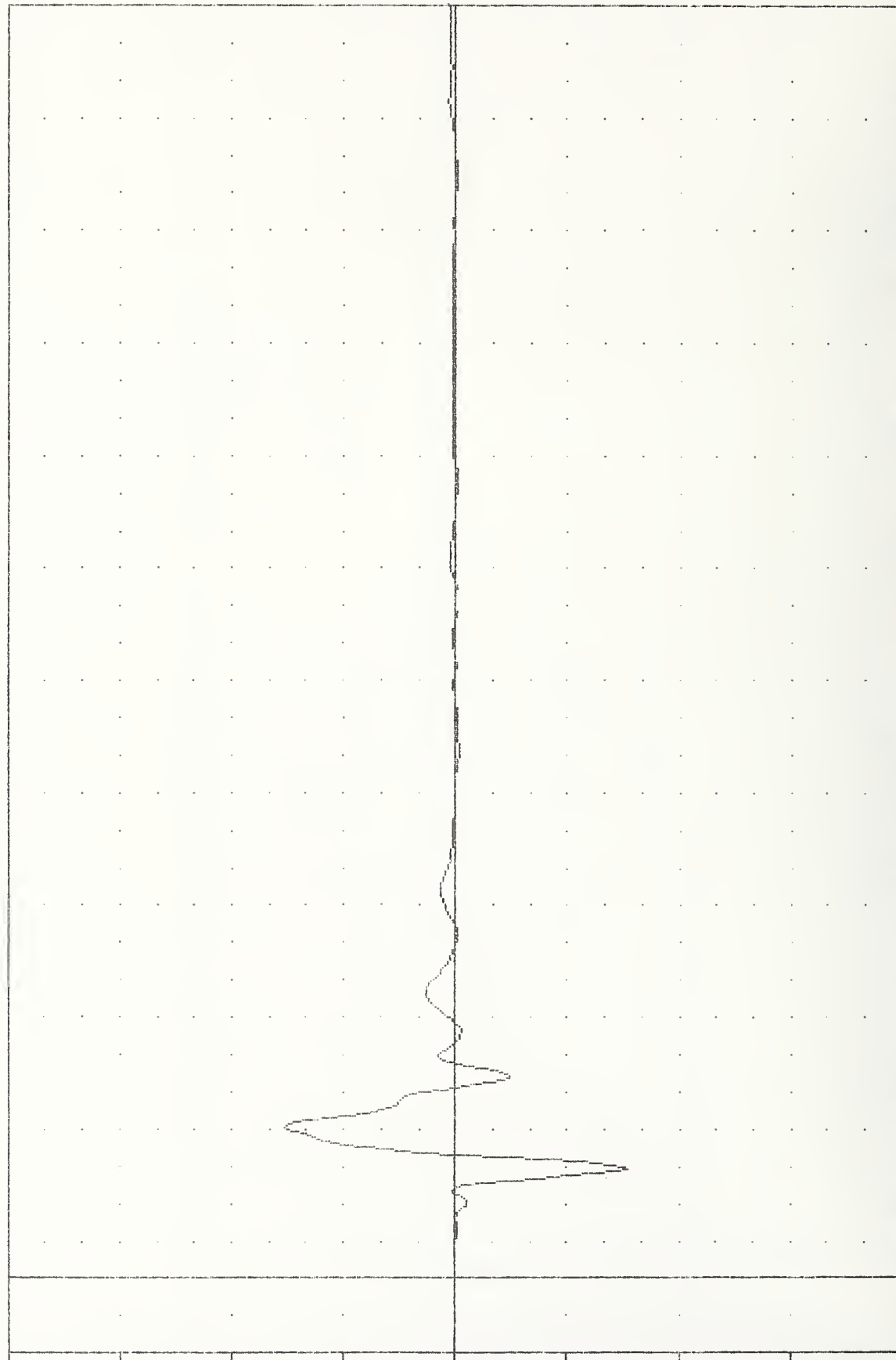
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T01YGA

TAC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 84300000000
 T12X61

PLOT DATE 1-NOV-84 16:03:24

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -76.90 28.75 , 76.89 40.00

ACCELERATION (G)



-20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

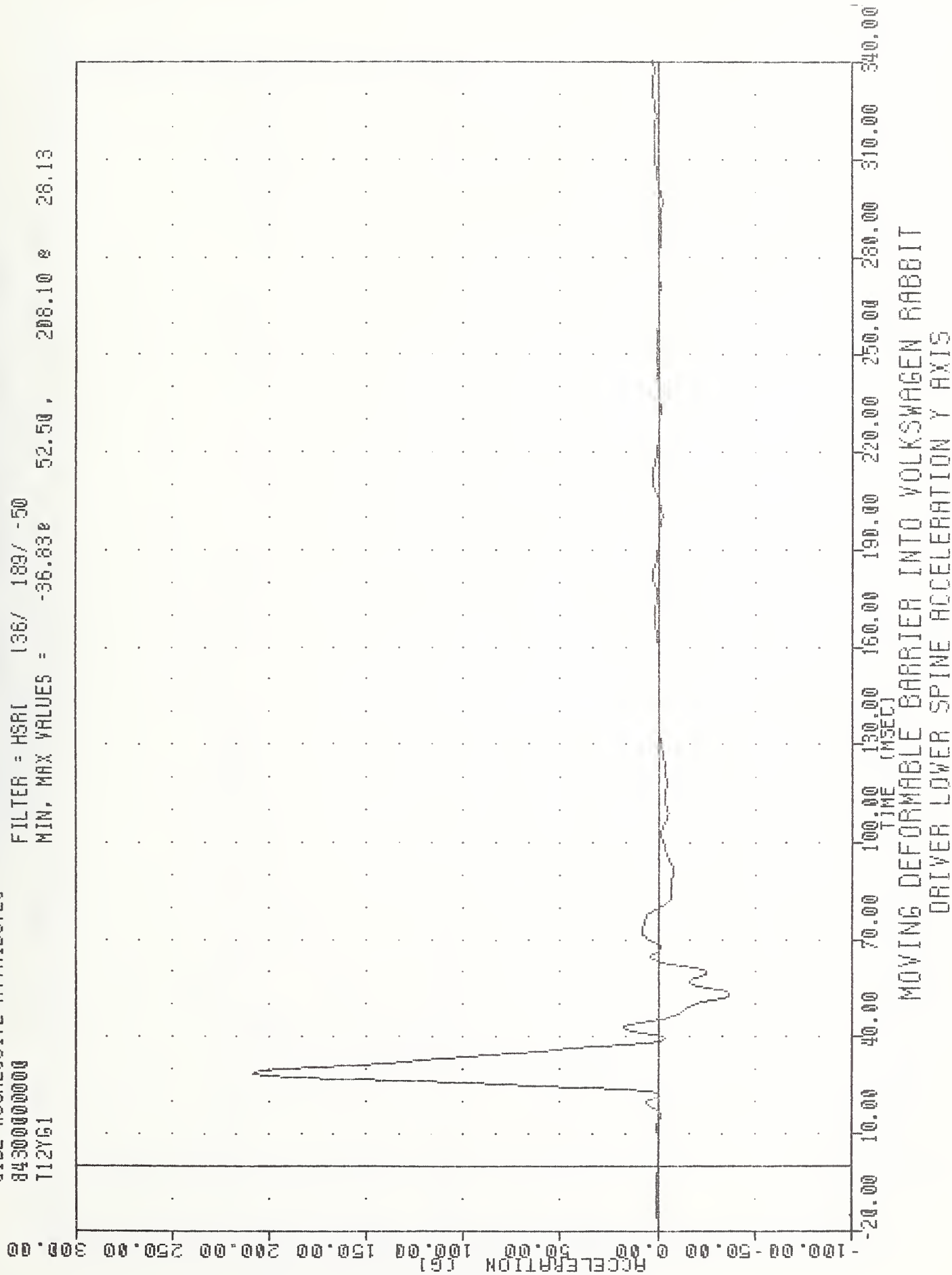
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LOWER SPINE ACCELERATION X AXIS

IRC , 841026
SIDE AGGRESSIVE ATTRIBUTES
84300000000
T12Y61

PLOT DATE 2-NOV-84 09:29:32

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -36.83e 52.50 , 208.10 e 26.13



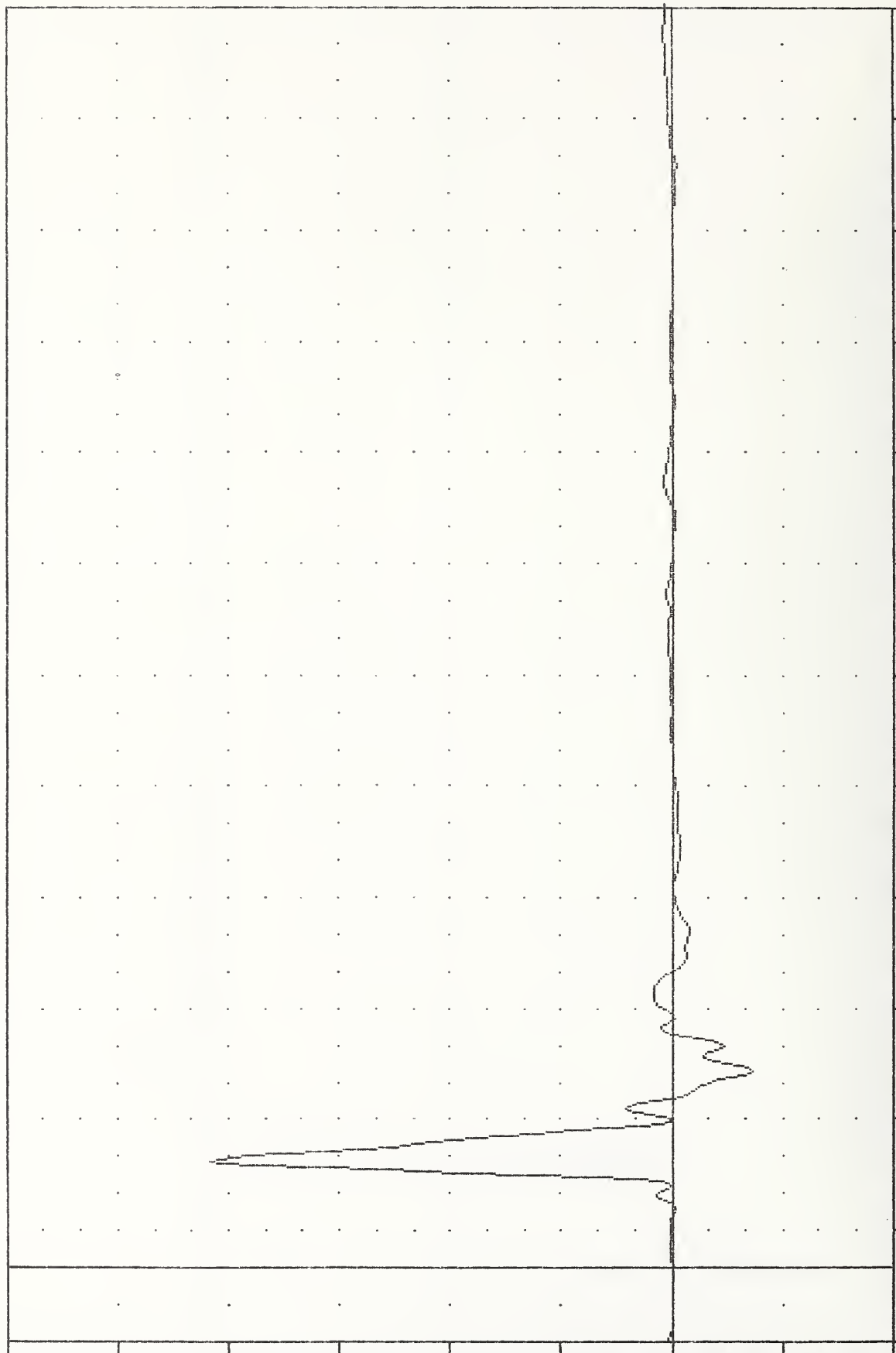
TRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T12YGA

PLOT DATE 2-NOV-84 09:29:32

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -36.630 52.50, 208.10 28.13

ACCELERATION (G)



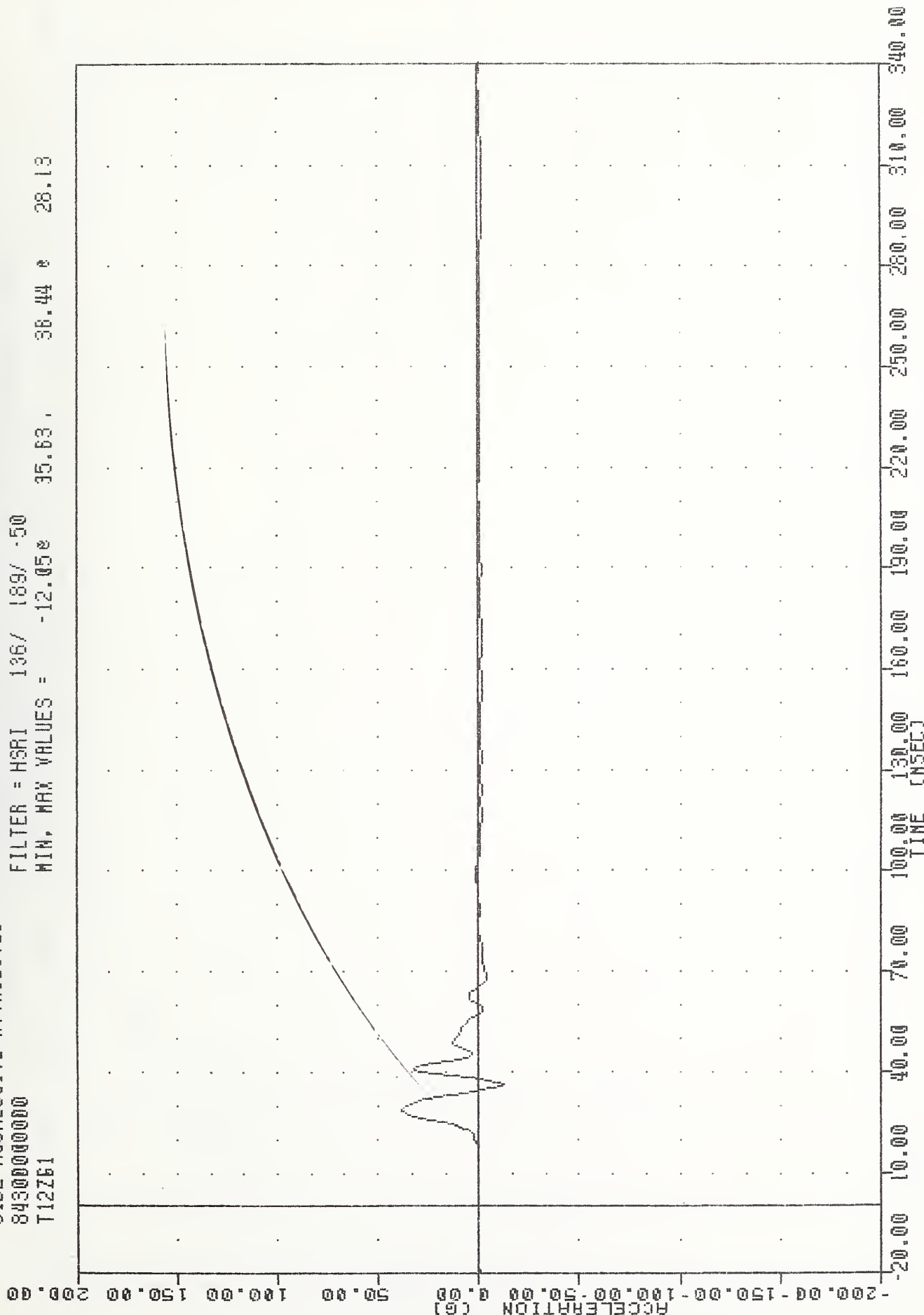
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LOWER SPINE ACCELERATION -2 Y AXIS

TRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T12Z61

PLOT DATE 1-NOV-84 16:03:24

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -12.05e 35.63 , 36.44 e 28.13

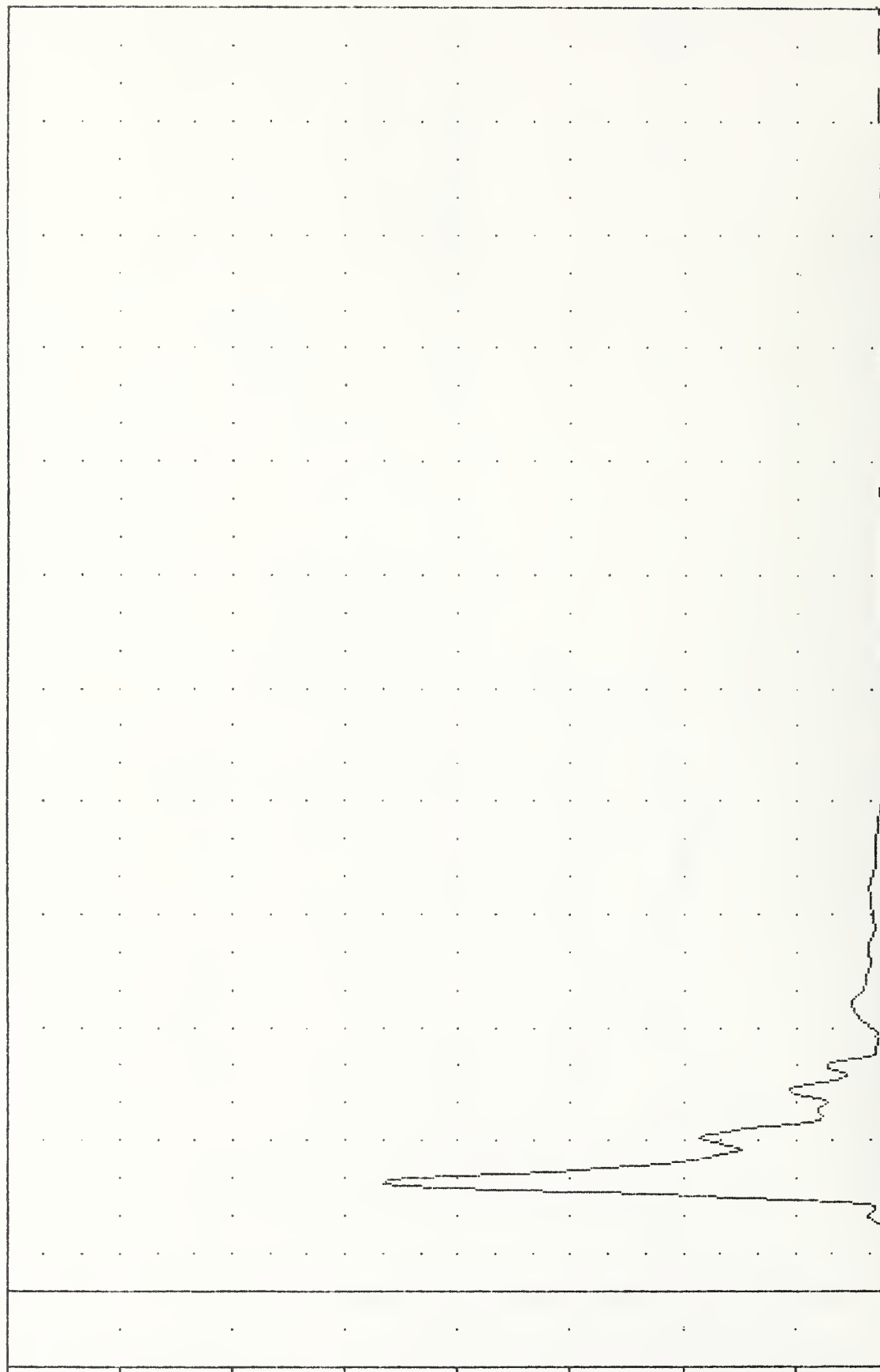


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LOWER SPINE ACCELERATION Z AXIS

TRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T12RG1

PLUT DATE 1-NOV-84 16:03:24
 FILTER = HSR1 136/ 189/ -50
 MIN. MAX VALUES = 0.10e -13.75, 223.65 e 28.13

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LOWER SPINE RESULTANT

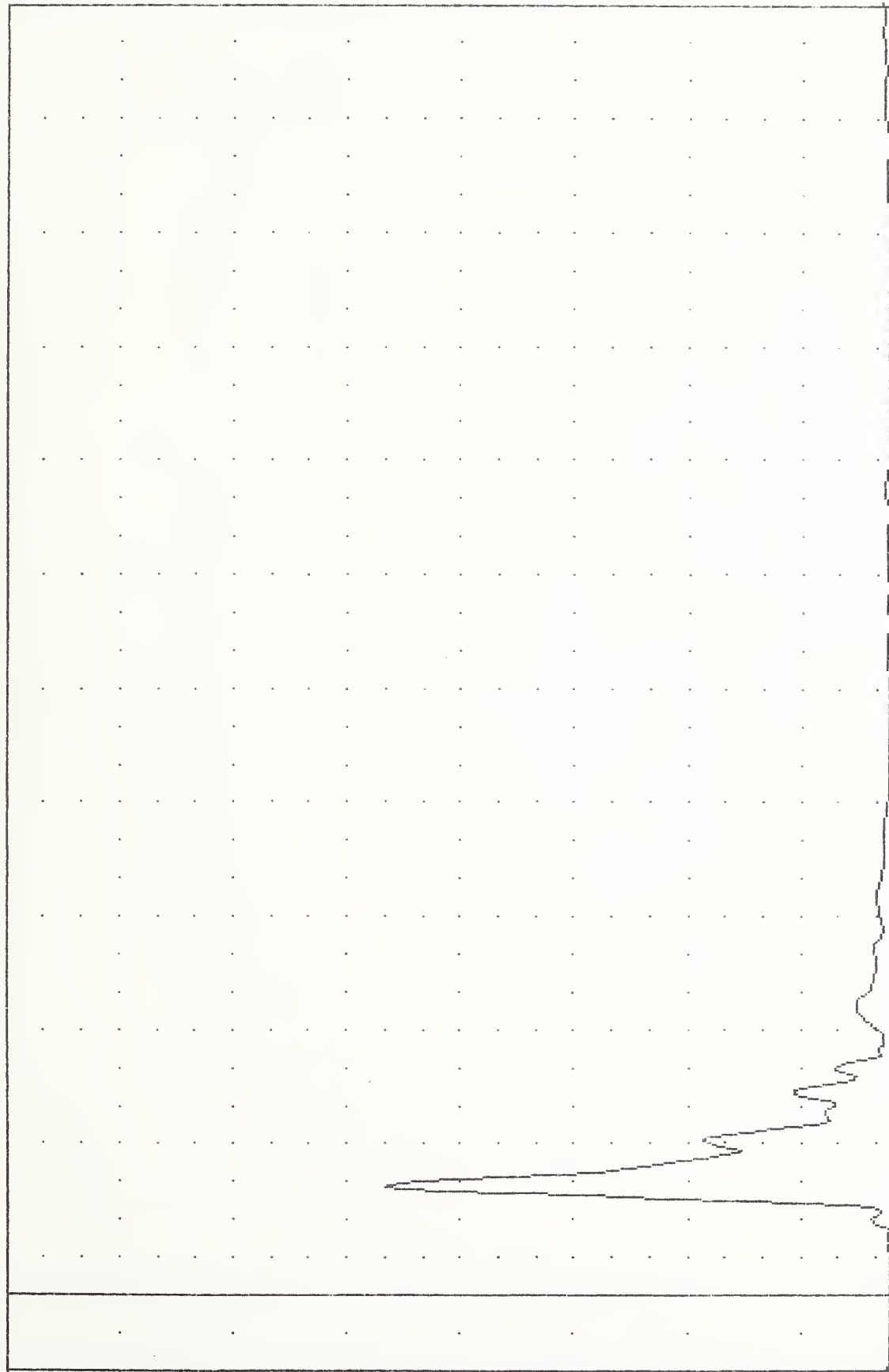
TRC , 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
T12RGA

PLUI DATE 1-NOV-84 16:04:53

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.08e -13.75, 223.65 e 28.13

ACCELERATION (G)
-10.00
-4.00
0.00
4.00
8.00
12.00
16.00
20.00
24.00
28.00
32.00
36.00
40.00



-20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

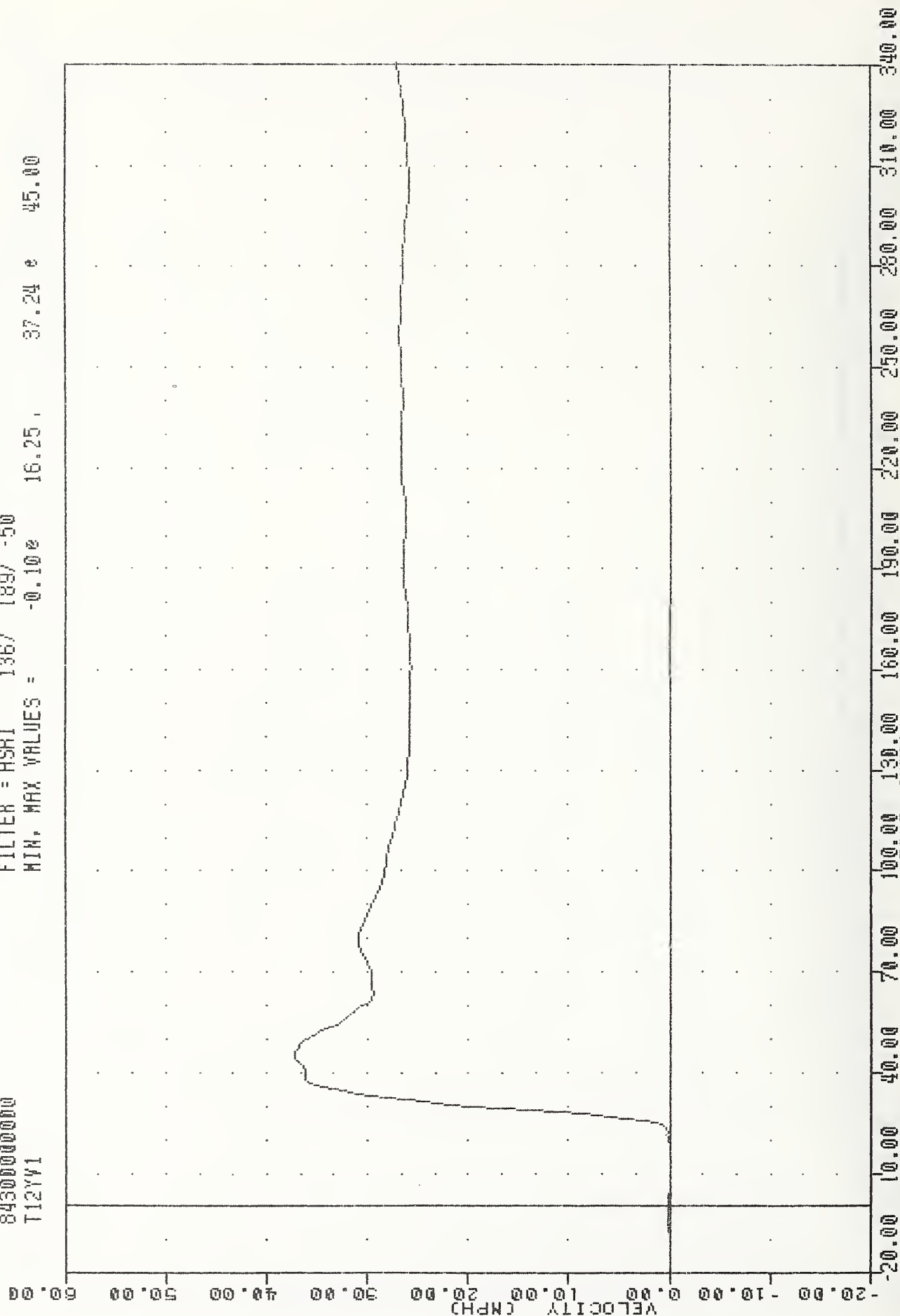
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE RESULTANT USING T12YGA

IHC , 841026
SIDE AGGRESSIVE ATTRIBUTES
84300000000
T12YV1

PLU1 DATE 1-NOV-84 16:05:10

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.10e 16.25 , 37.24 e 45.00



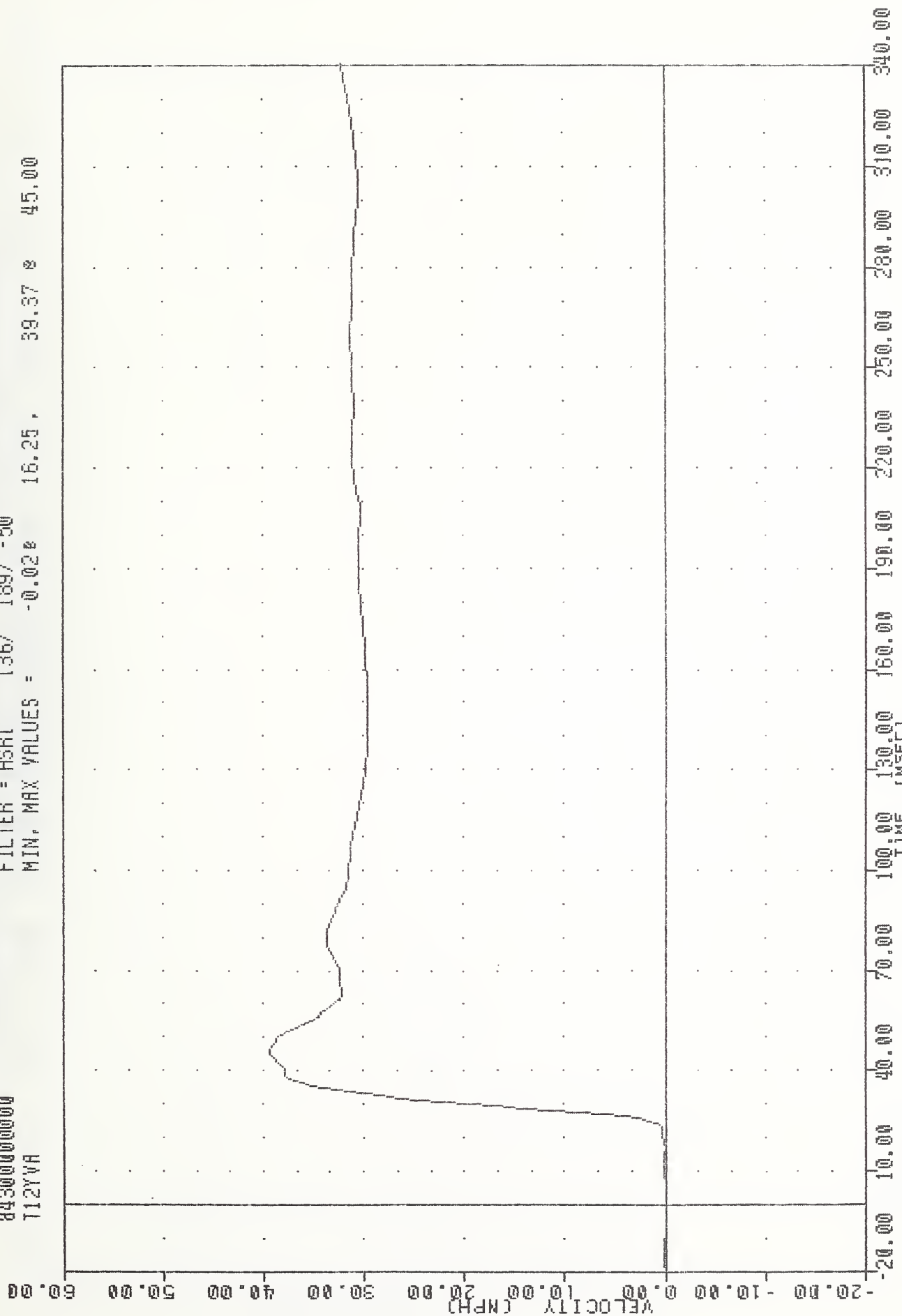
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T12YGI

IRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T12YVA

PLUT DATE 1-NOV-84 16:05:10

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.02% 16.25% 39.37% 45.00

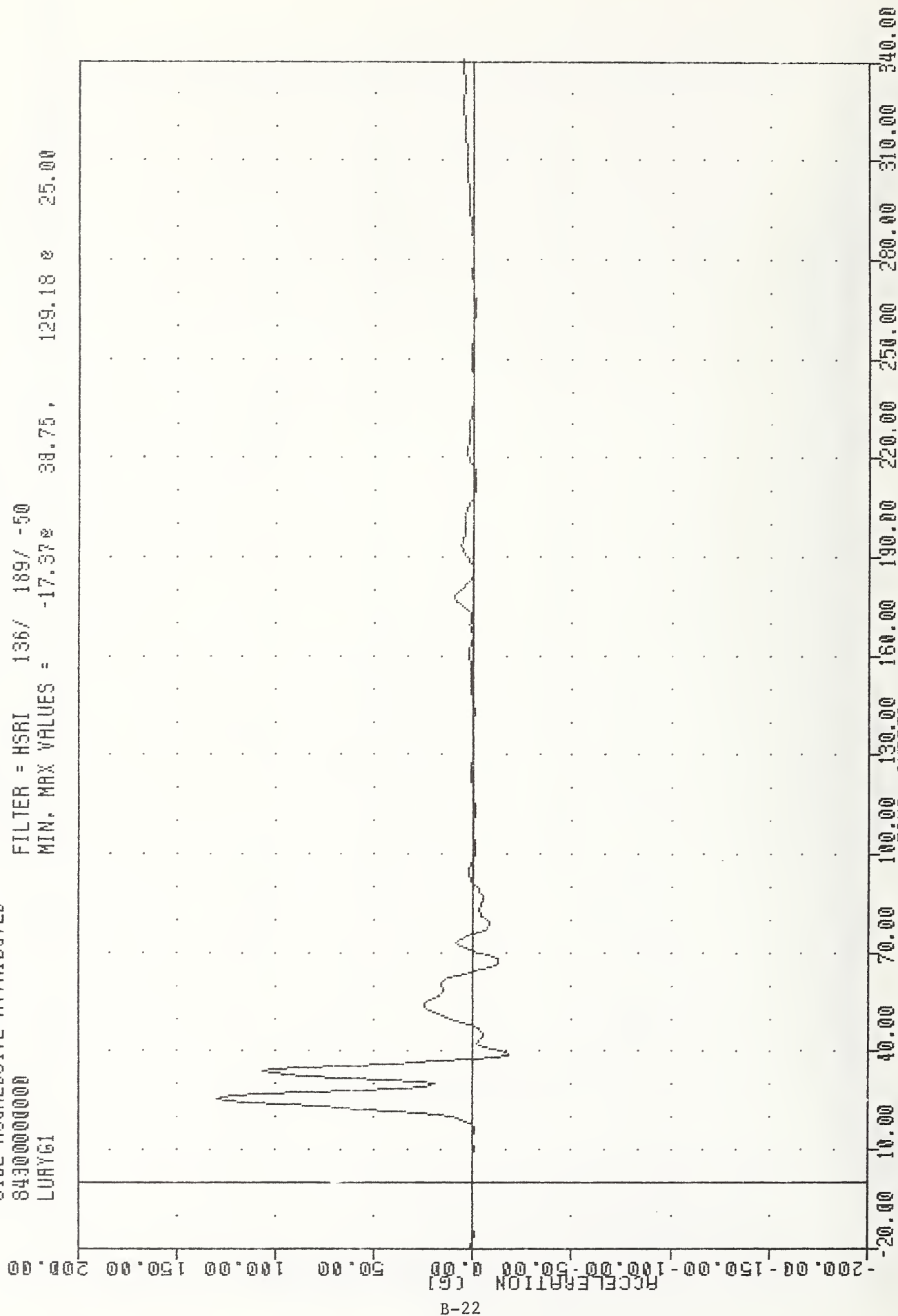


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12YGA

IMC 841020
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LURY61

FLUI Dn1C 1-NOV-04 10:03:24

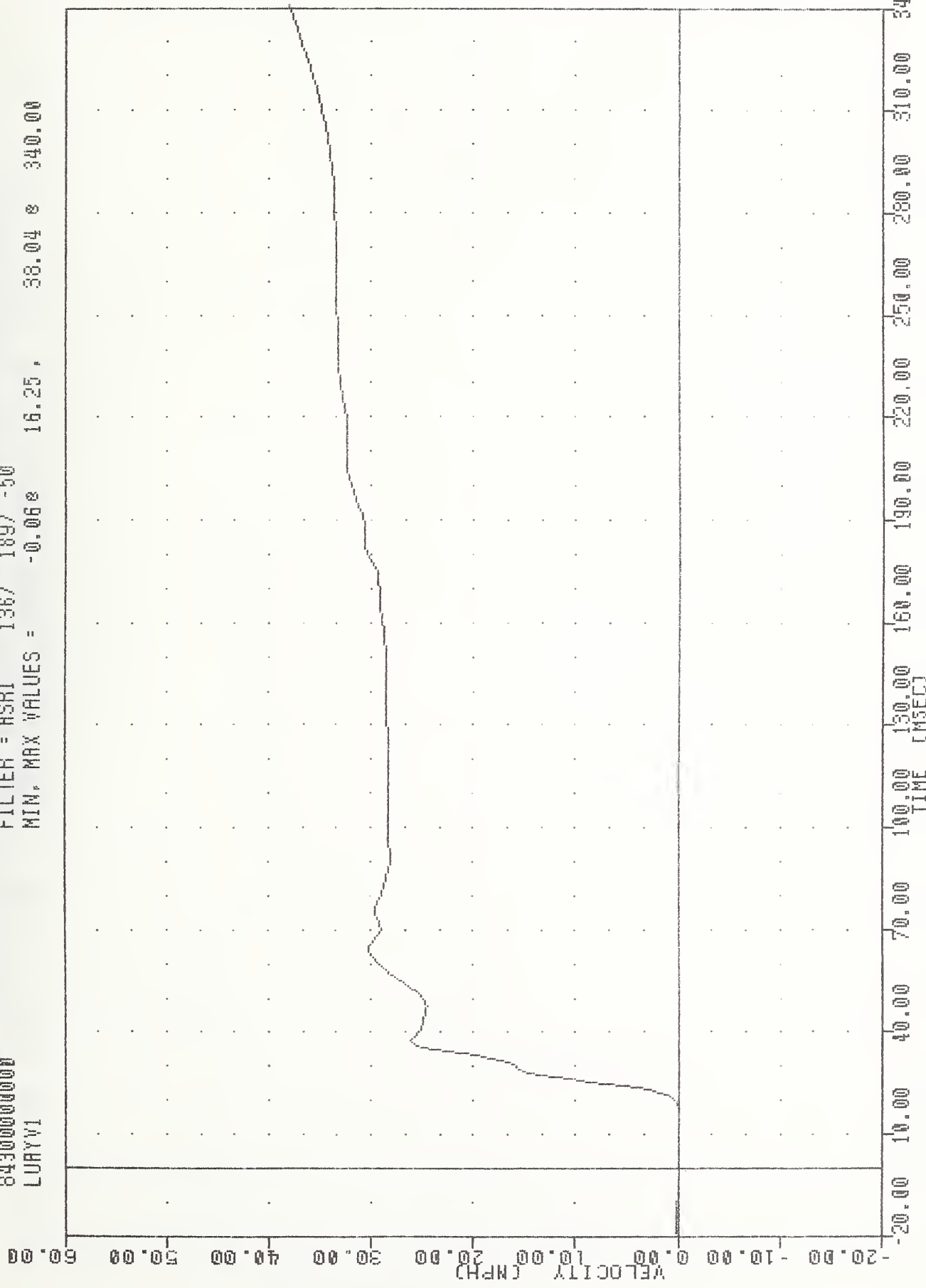
FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -17.37% 38.75, 129.18 % 25.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LEFT UPPER RIB ACCELERATION Y AXIS

IRL 841020
 SIDE AGGRESSIVE ATTRIBUTES
 84300000000
 LURYV1

FLU1 DATE 17NOV84 16:05.10
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -0.068 16.25, 38.04 & 340.00



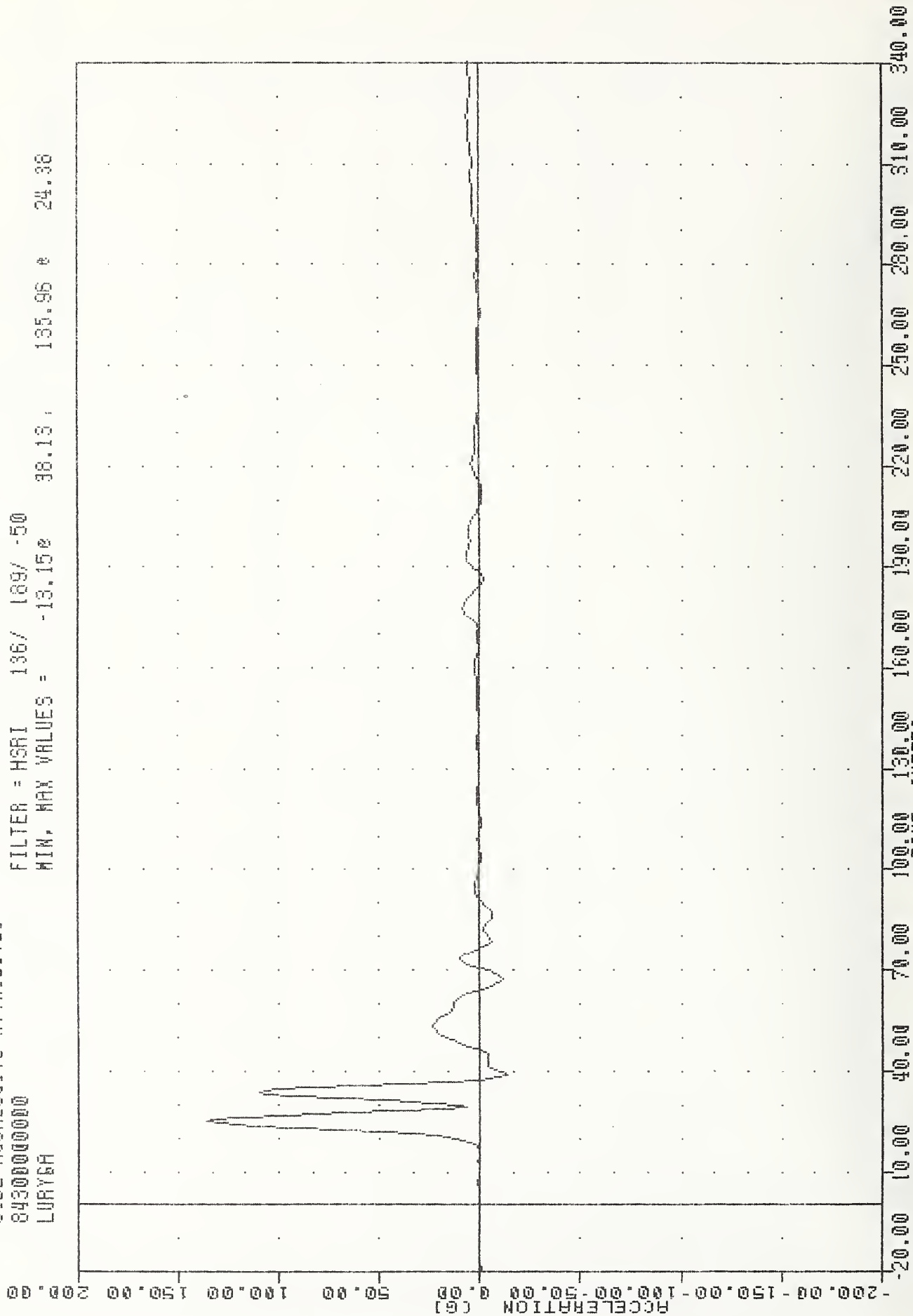
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LURYG1

INL 841020
 SIDE AGGRESSIVE ATTRIBUTES
 84300000000
 LURYSR

PLOT DATE 17NOV-84 15:03:24

FILTER = HSRI 136/ 189/ -50

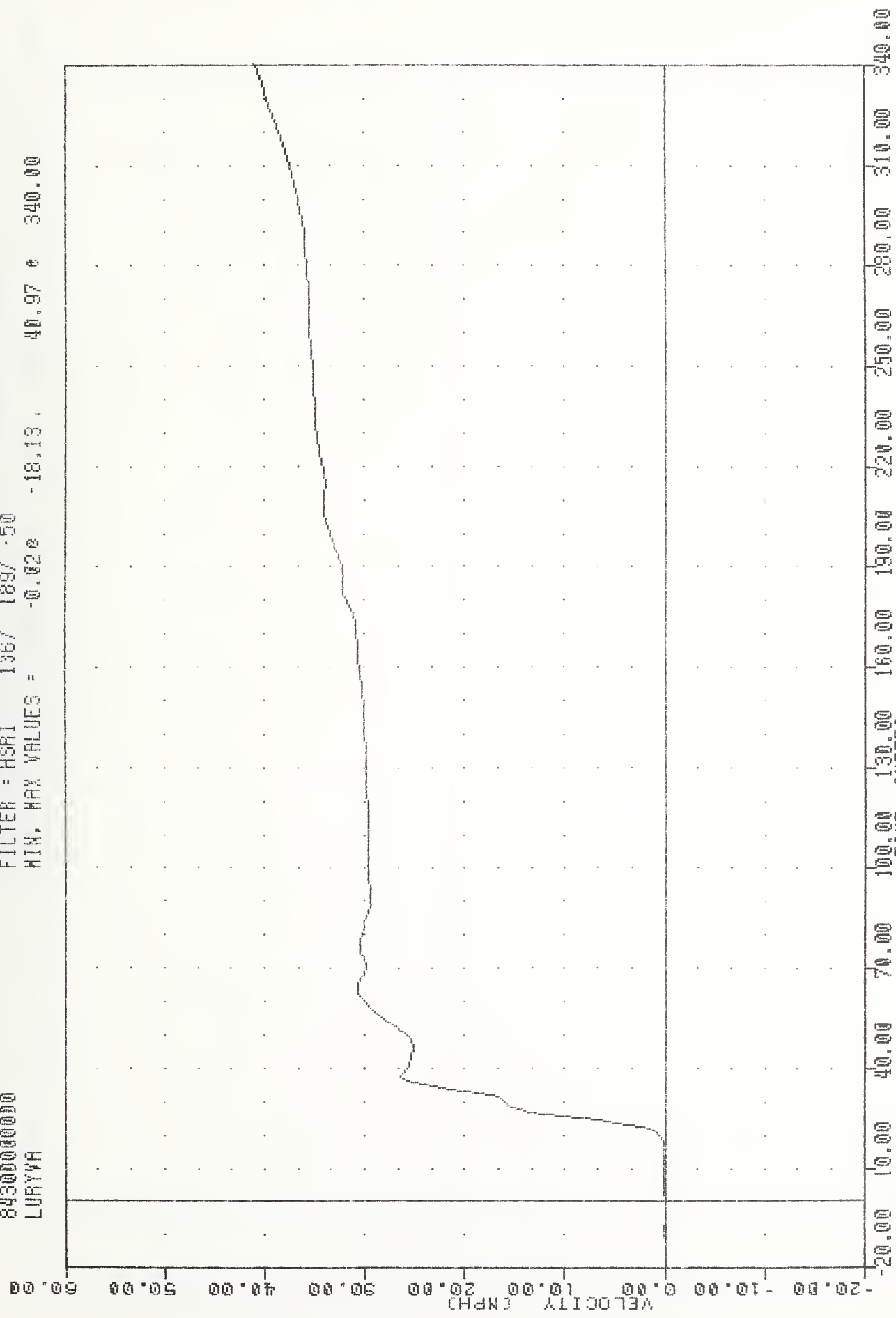
MIN, MAX VALUES = -13.15e 38.13, 135.95 e 24.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LEFT UPPER RIB ACCELERATION -2 Y AXIS

IHL
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LURYVA

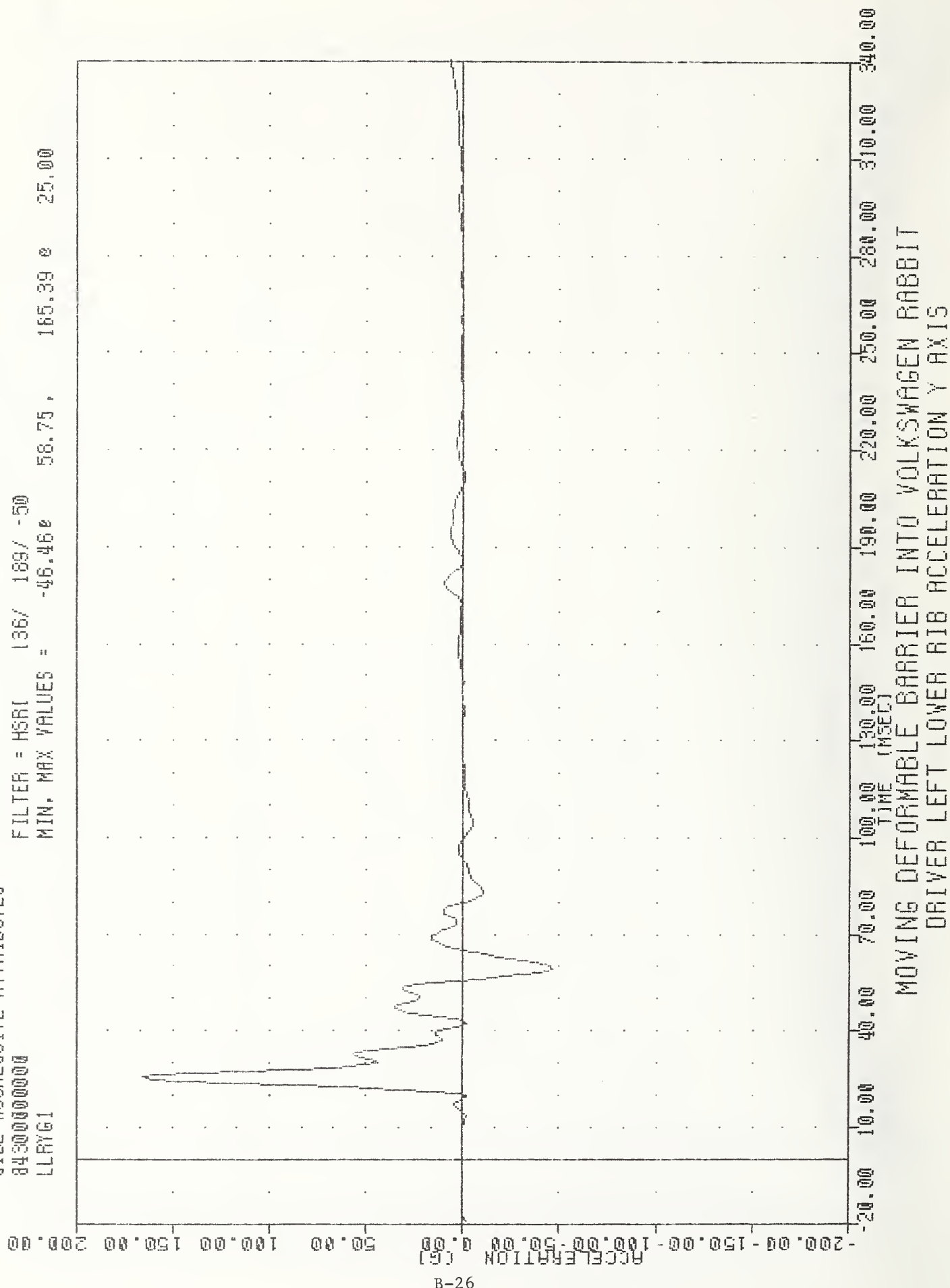
PLU1 DRIE 1-NOV-84 16:05:10
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.028 -18.13, 40.97 e 340.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LURYGA

INC 841020
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LLRYG1

FLUI DATE 1-NOV-84 16:03:24
 FILTER = HSR1 136/ 189/ -50
 MIN. MAX VALUES = -46.46e 58.75, 165.39 e 25.00

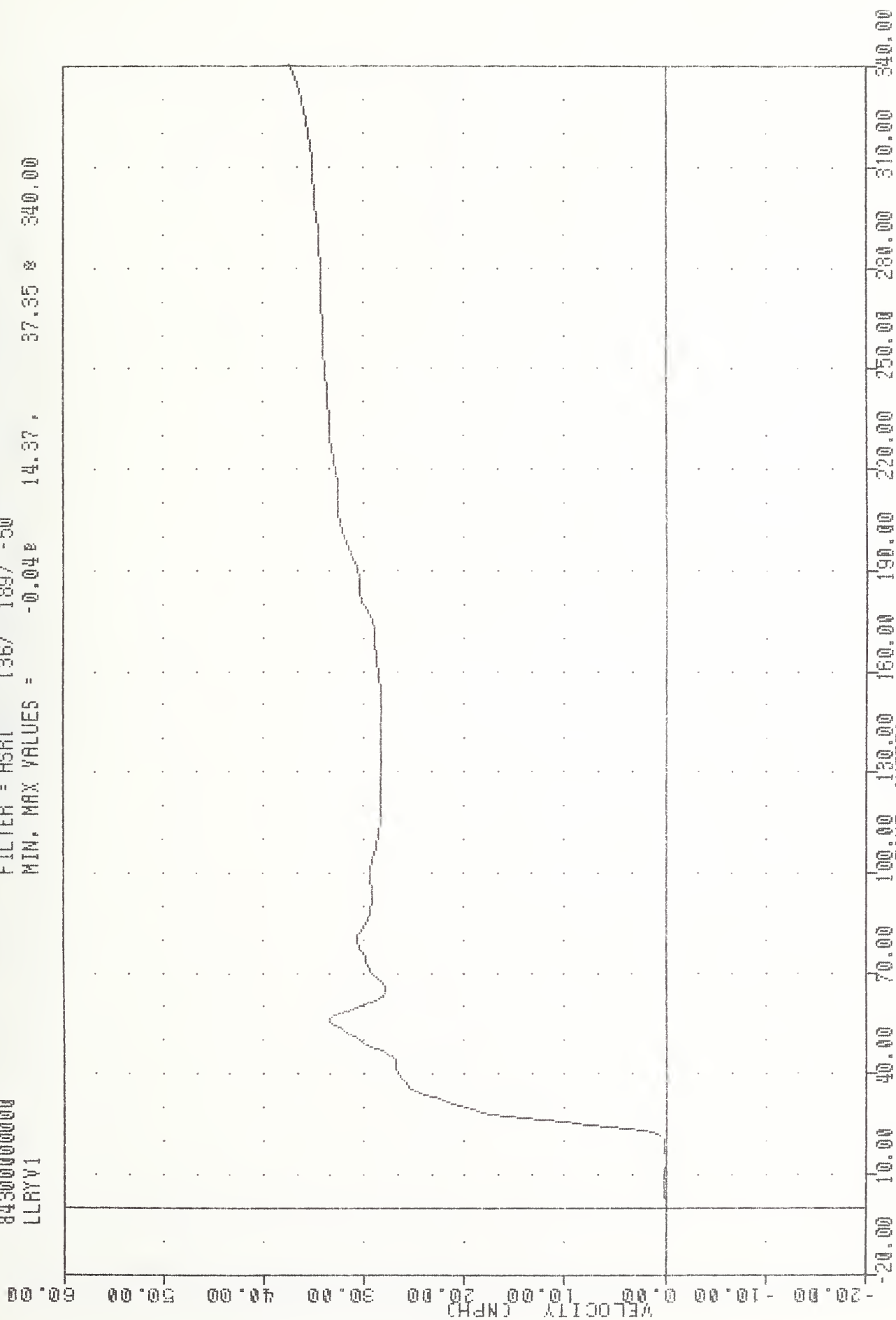


INL 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LLRYV1

PL01 DATE 17-NOV-84 16:05:10

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.04e 14.37, 37.35 e 340.00



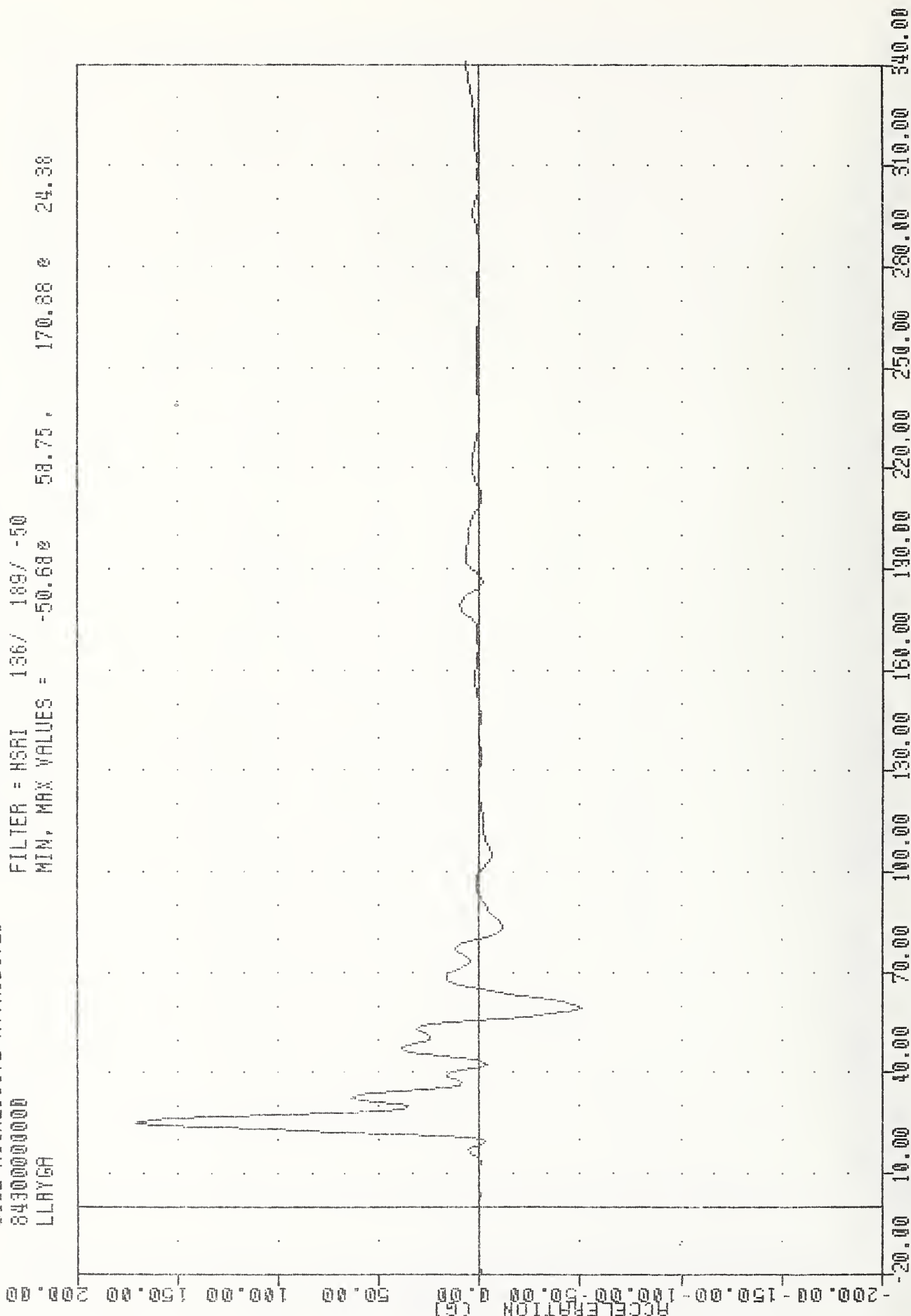
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLRYG1

TRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LLAYGA

PLOT DATE 1-NOV-84 16:03:24

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -50.68 58.75, 170.88 24.38



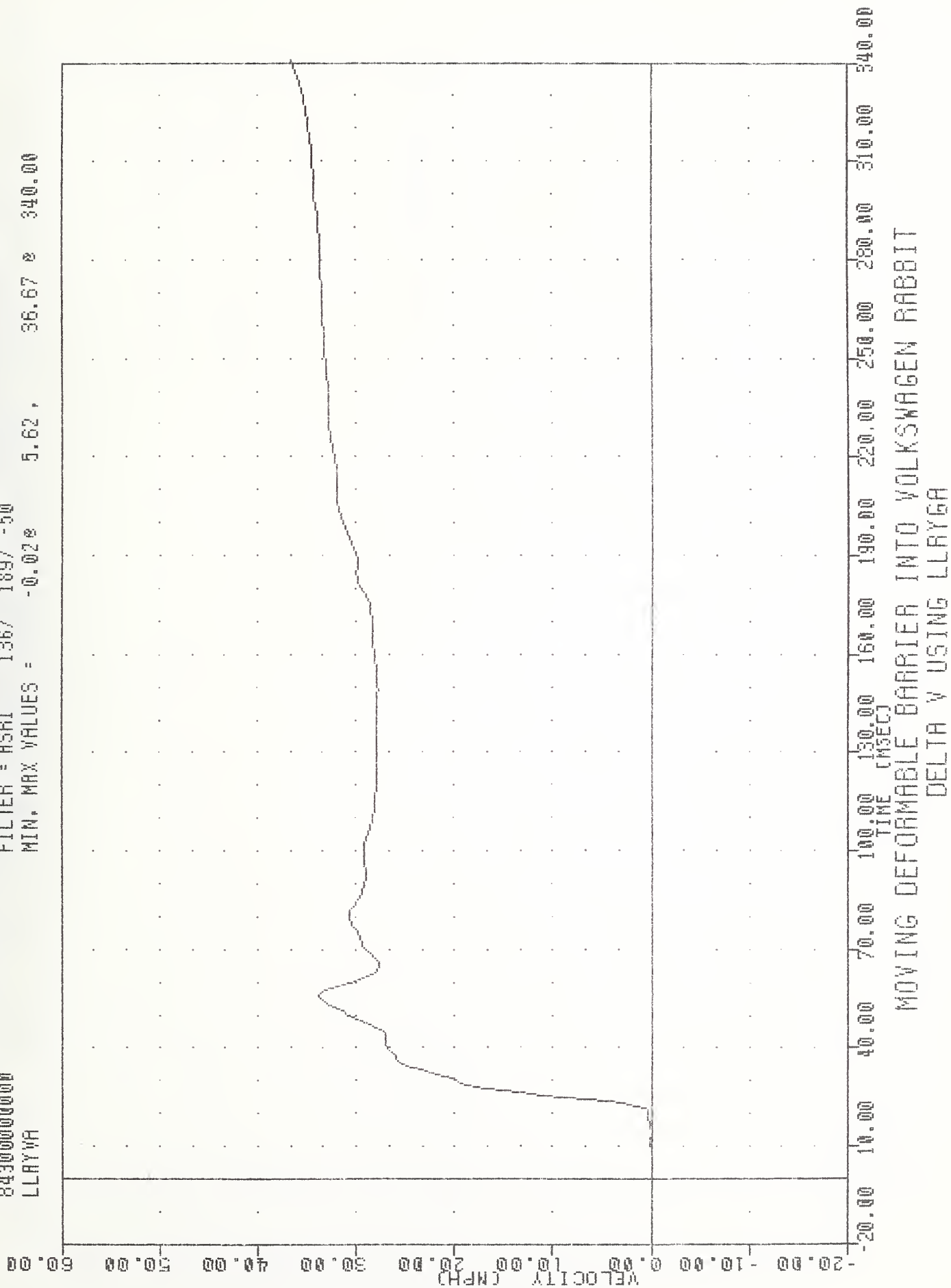
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LEFT LOWER RIB ACCELERATION -2 Y AXIS

IHL , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LLYVA

PLUT DATE 1-NOV-84 16:05:10

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.028 5.62, 36.67 340.00



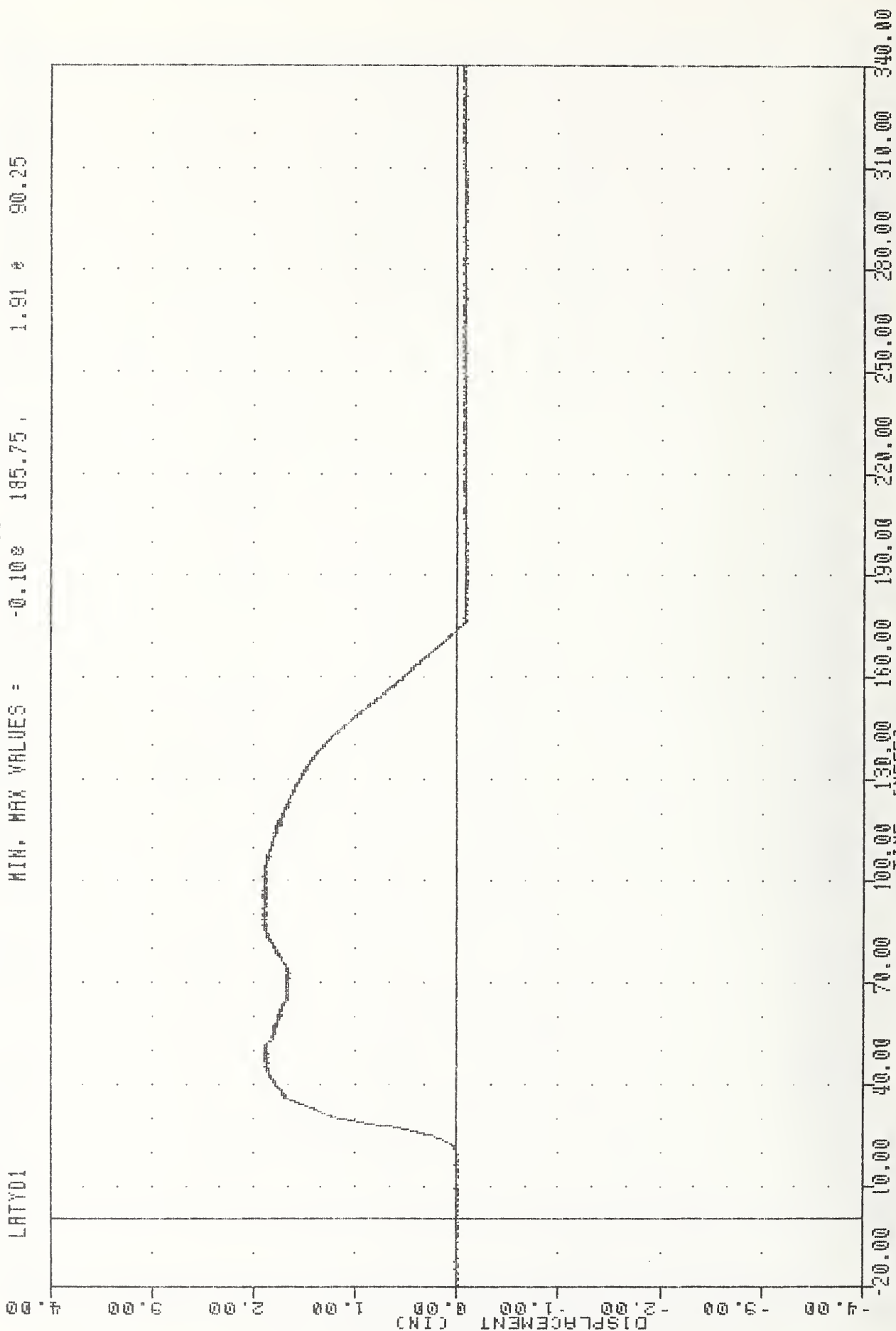
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLYVA

TAC 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LATYD1

PLUT DATE 1-NOV-84 16:02:00

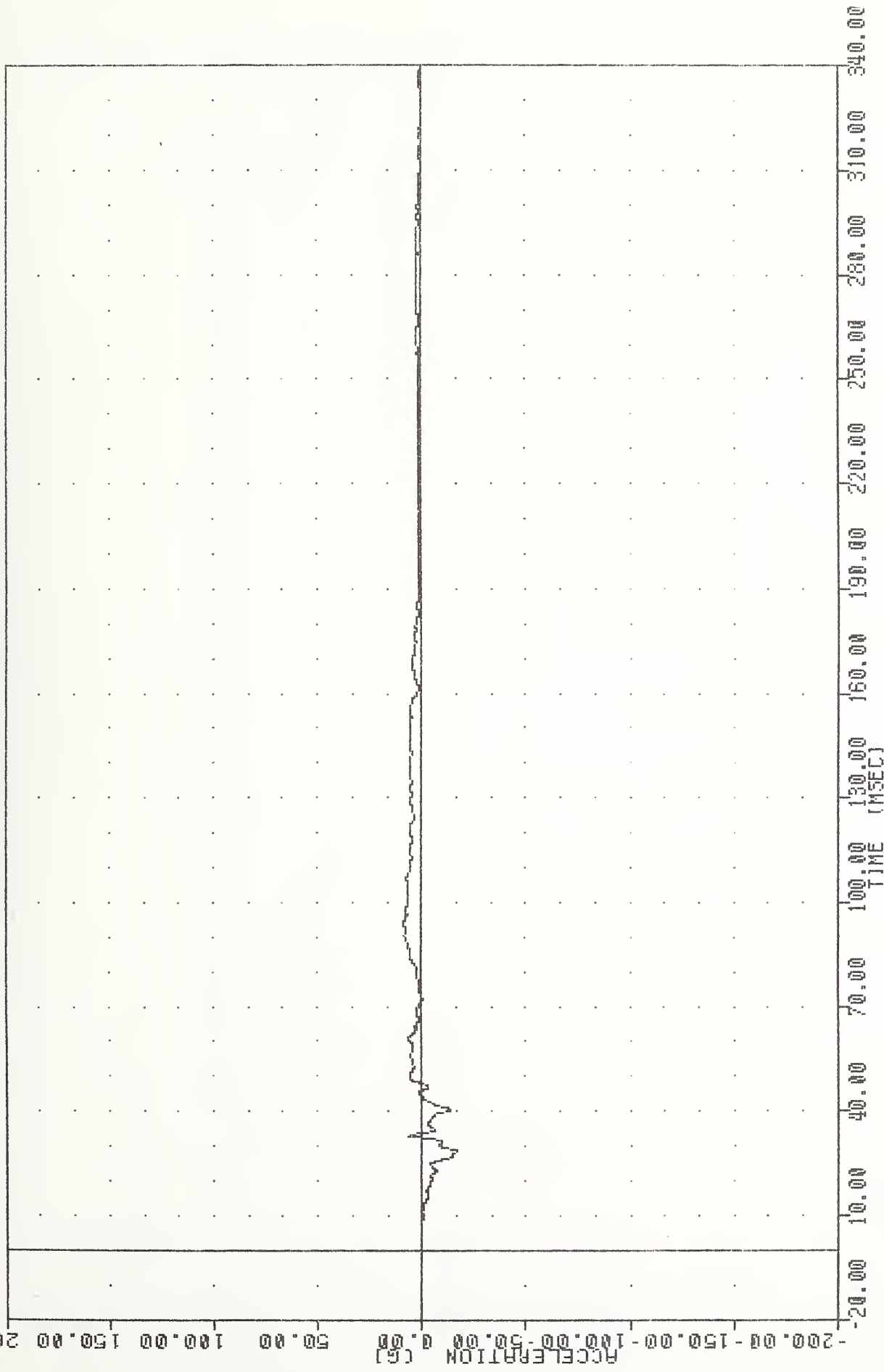
FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -0.100 185.75, 1.91 0 90.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LEFT RIB TO SPINE DISPLACEMENT INCHES

INC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 PEVXG1
 PLU1 DH1C 1-NUV-84 16:02:06
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -16.798 28.50 , 8.56 e 93.88



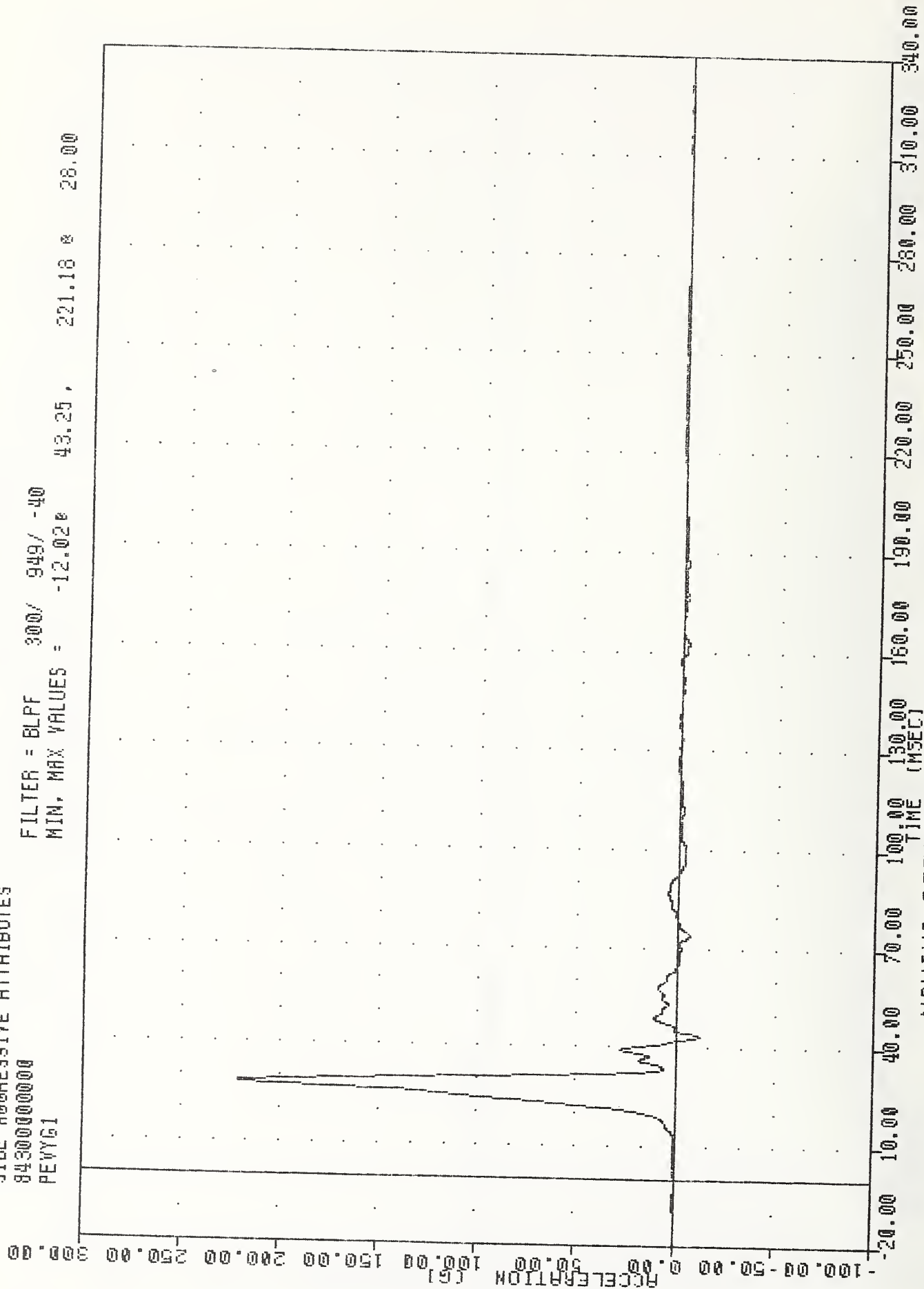
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER PELVIS ACCELERATION X AXIS

TRC ,841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
PEVY61

PLOT DATE 2-NOV-84 09:29:32

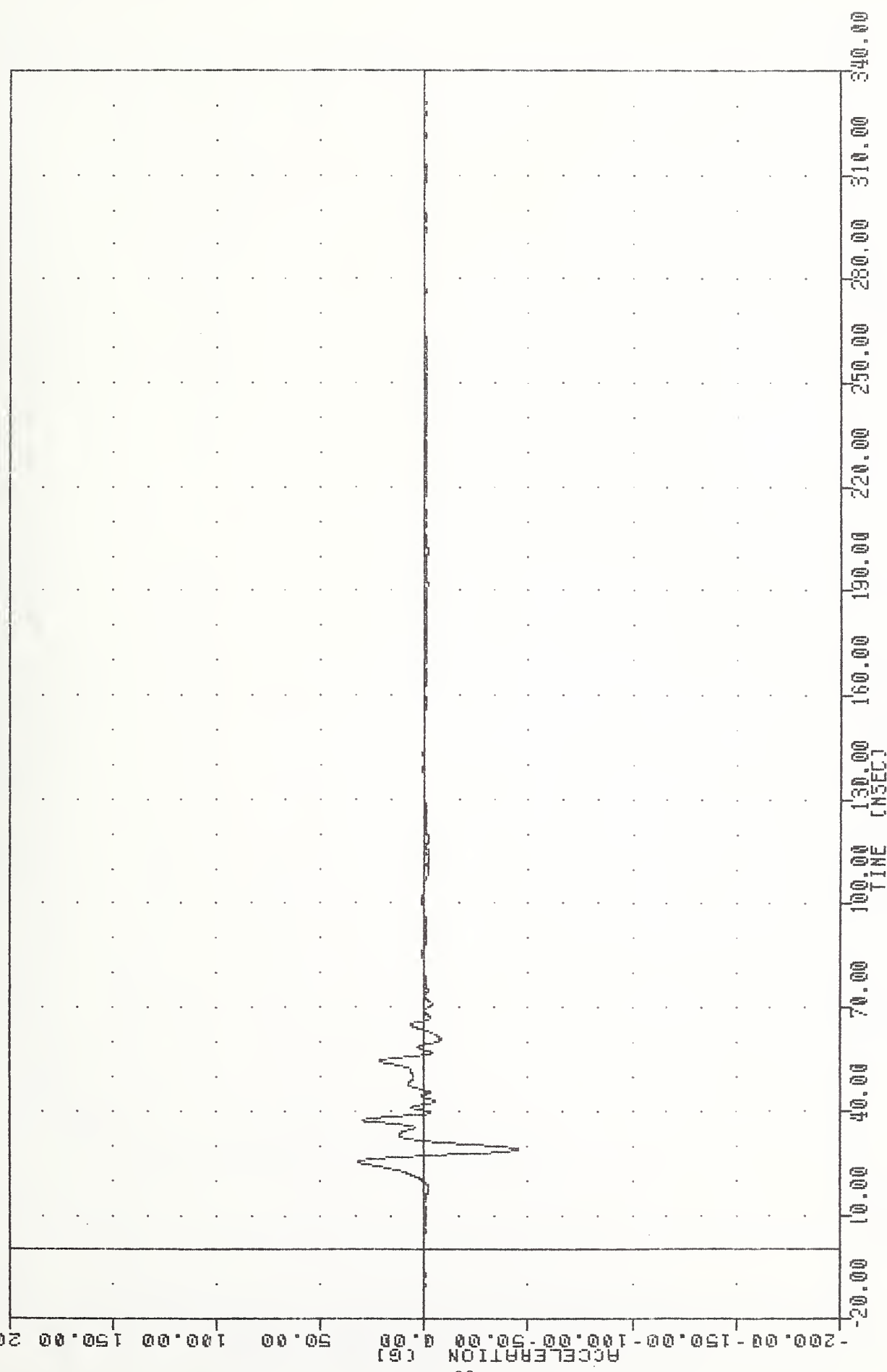
FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -12.02e 43.25, 221.18 e 28.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS ACCELERATION Y AXIS

IHL 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 PEVZ61
 FLUT WHIE 1-NOV-84 15:02:06
 FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -45.11e 28.68 , 32.45 e 25.13

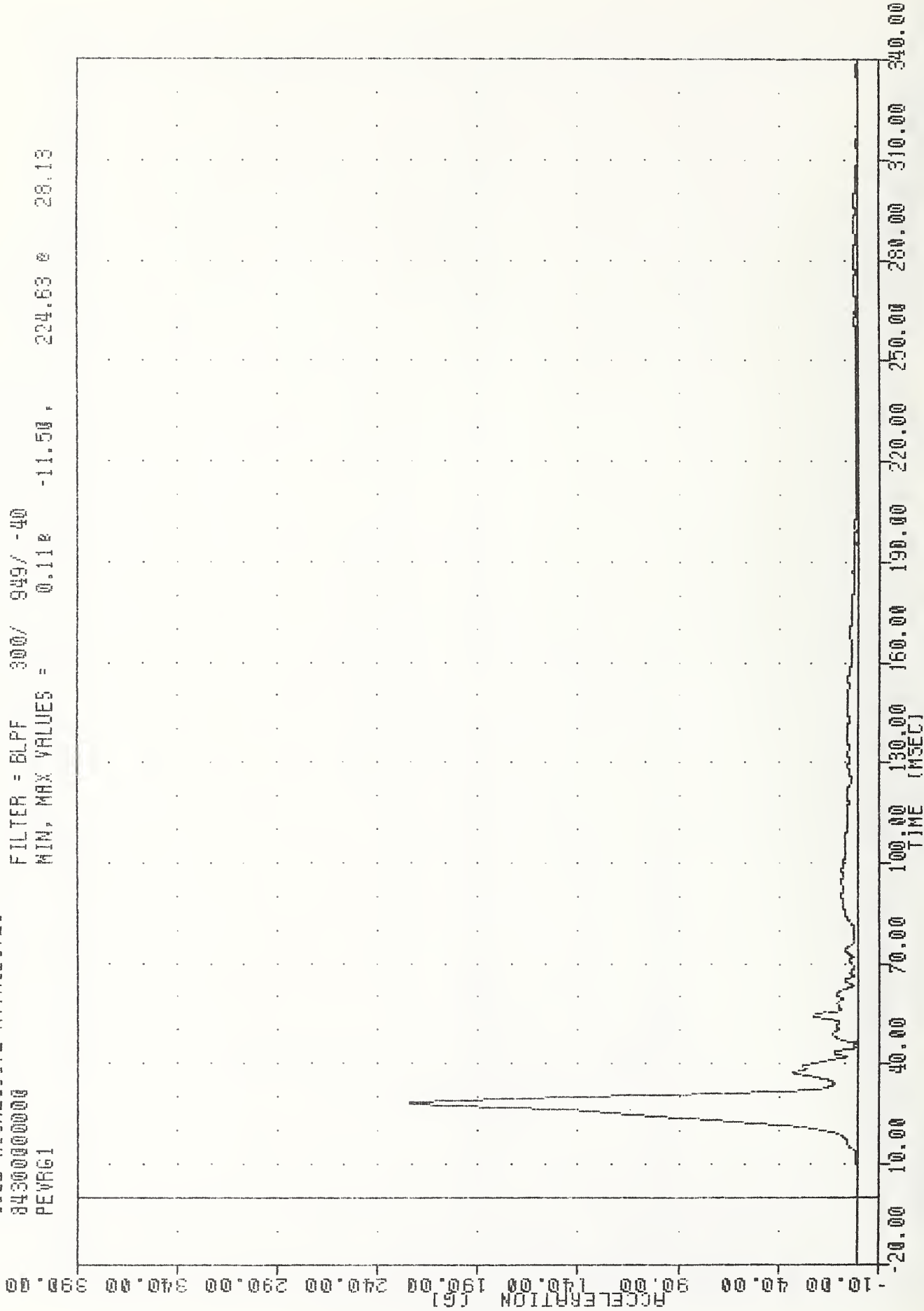


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER PELVIS ACCELERATION Z AXIS

IRU , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 PEVRG1

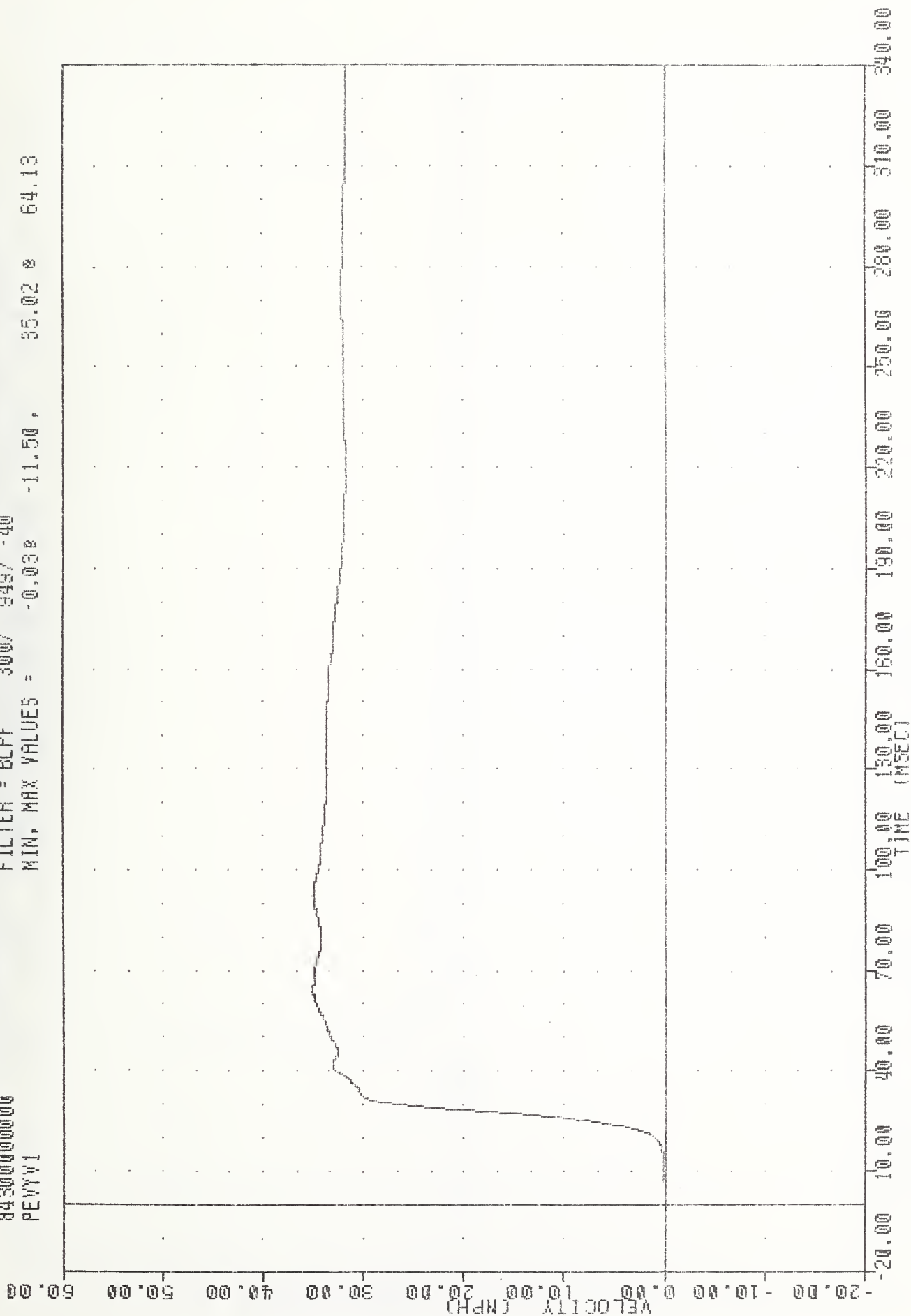
PLUT DATE 1-NOV-84 15:02:00

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = 0.112 -11.50, 224.63 28.13



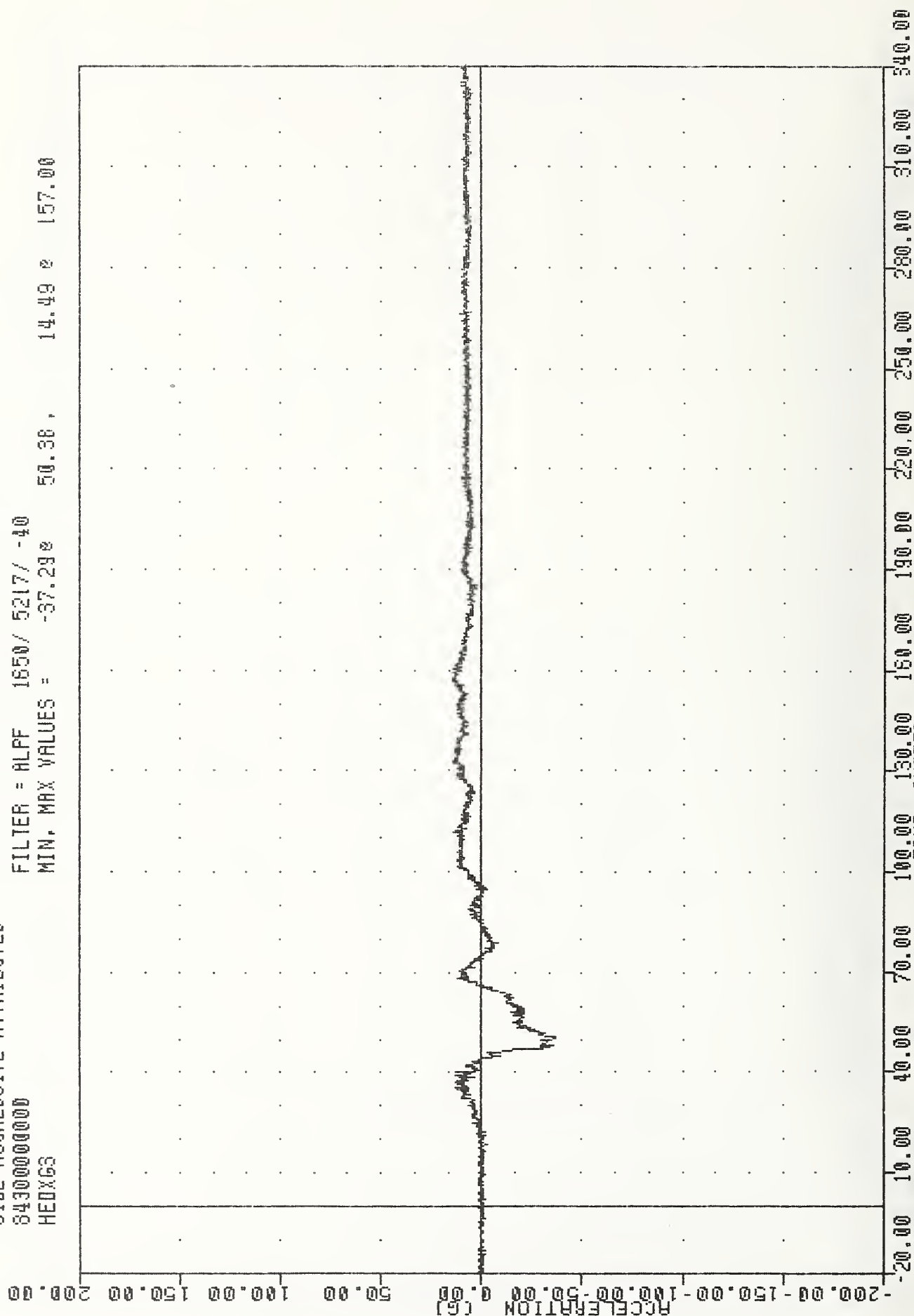
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER PELVIS RESULTANT

INC 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 PEVYV1
 PLU1 UNIT 1-NOV-84 16:06:00
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -0.038 -11.50, 35.02 64.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING PEVYV1

IRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 HEX63
 FILTER = ALPF 1850/ 5217/ -40
 MIN. MAX VALUES = -37.298 50.38, 14.49 157.00



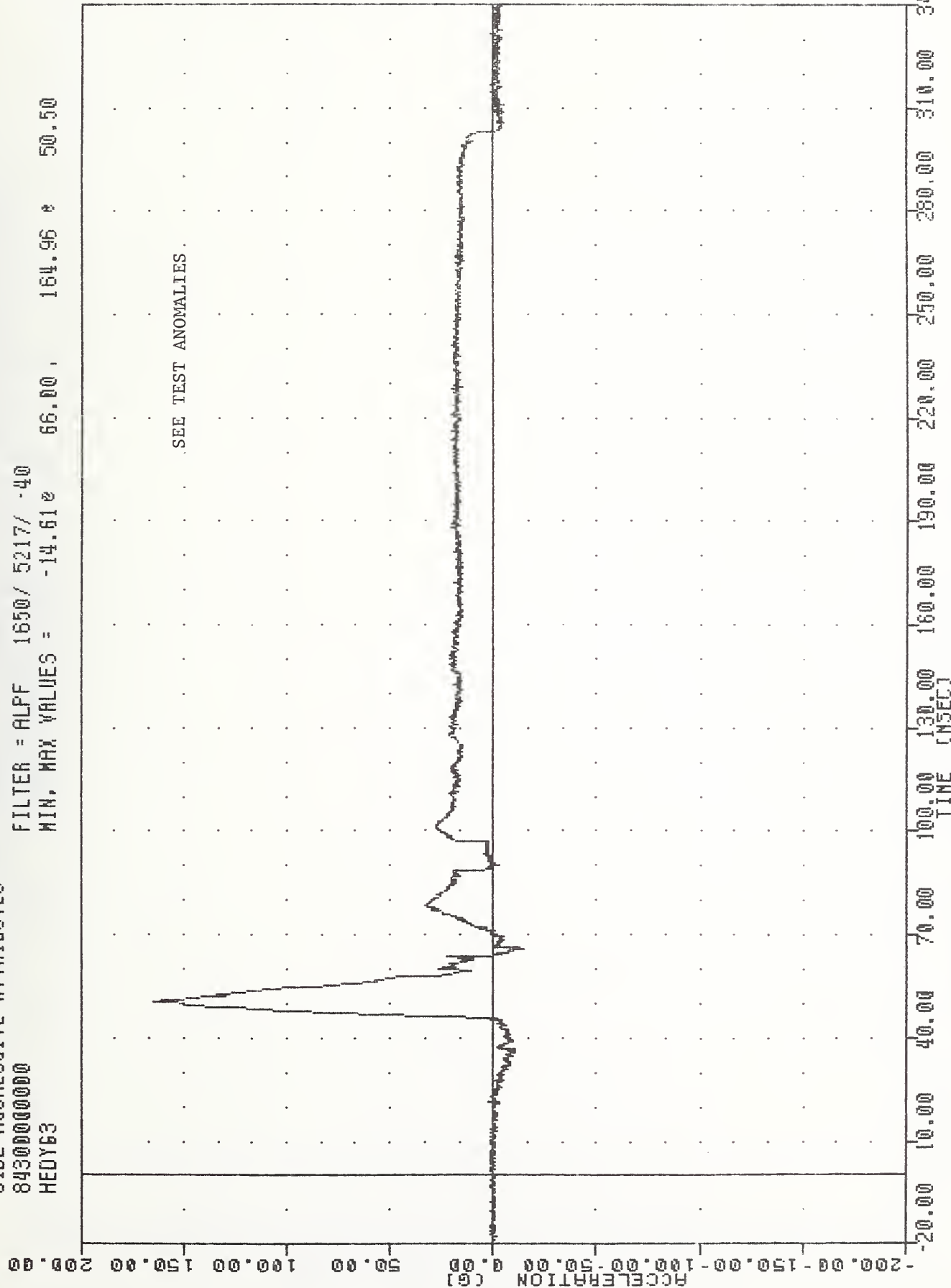
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER HEAD ACCELERATION X AXIS

TAC , 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
HEDY63

PLU1 DATE 1-NOV-84 16:02:06

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -14.61e 66.00 , 164.96 e 50.50



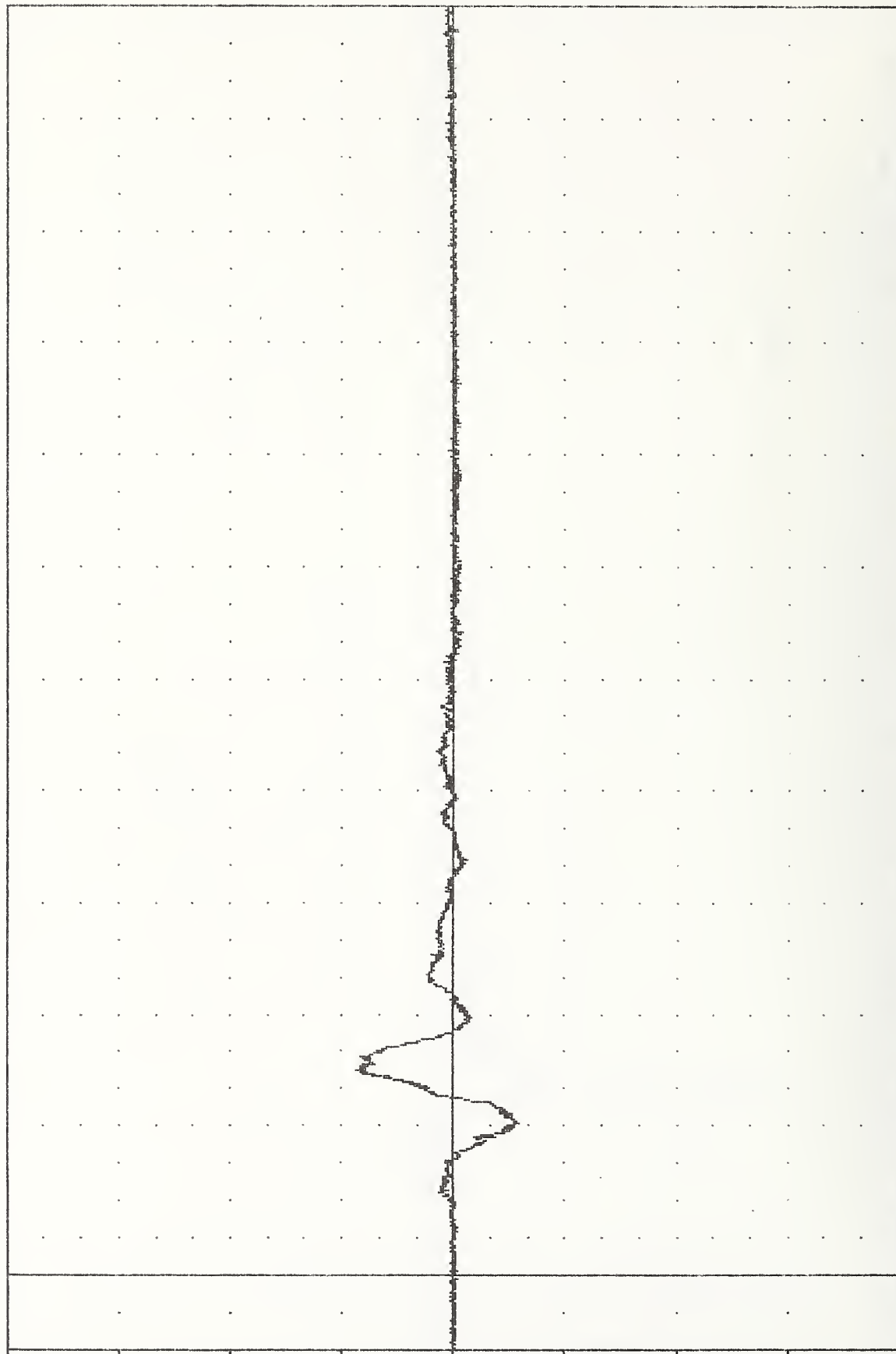
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION Y AXIS

IHC , 841025
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 HEDZG3

PLOT DATE 1-NOV-84 16:02:00

FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = -29.34 40.63 , 43.55 54.63

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER HEAD ACCELERATION Z AXIS

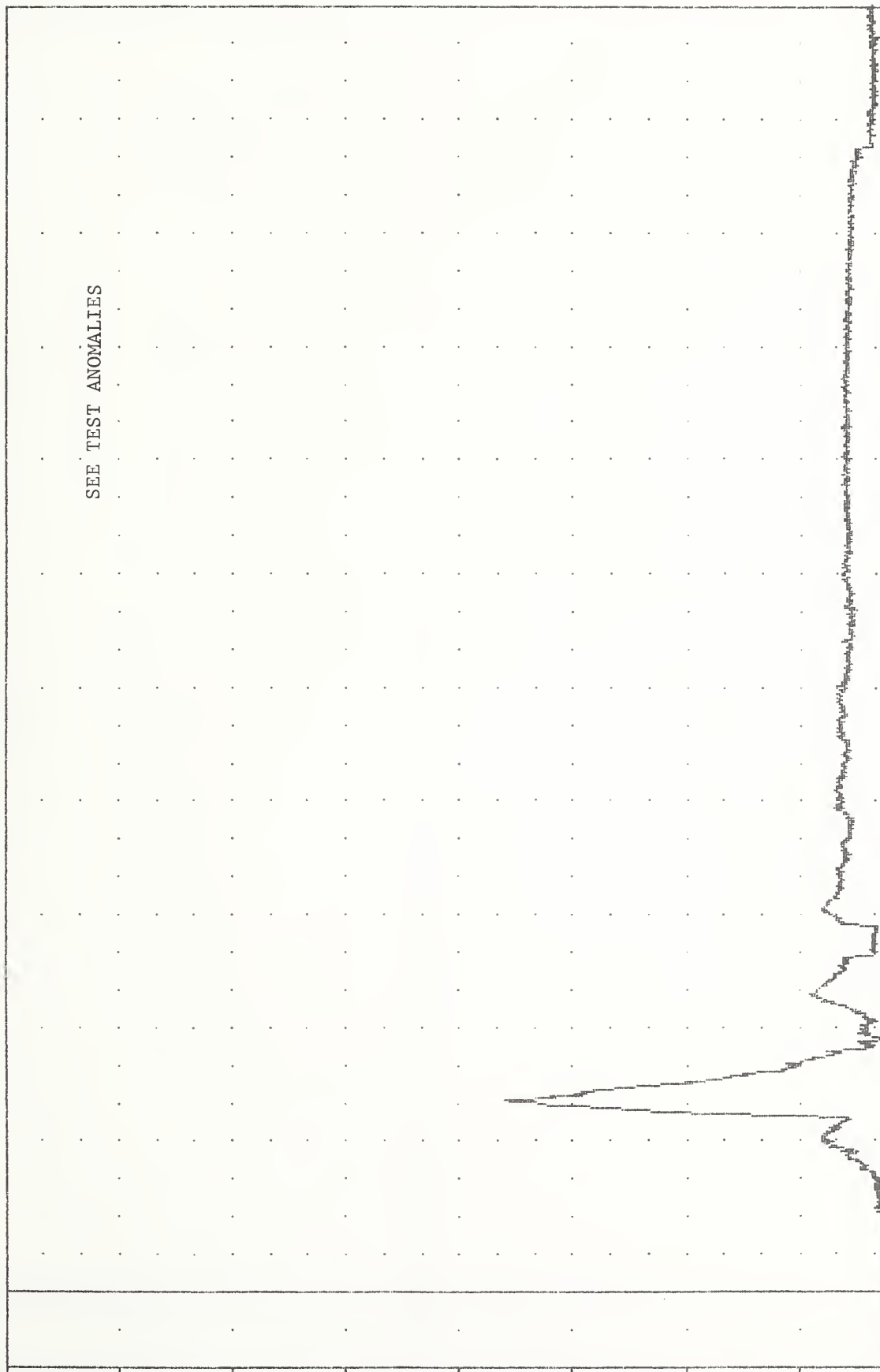
IRC 841026
 SIDE AGGRESSIVE ATTRIBUTES
 84300000000
 HEDRG3

PTDI DATE 1-NOV-84 16:02:00

FILTER = ALPF 1650 / 5217 / -40

MIN. MAX VALUES = 0.120 -6.63, 169.93 50.50

ACCELERATION (G)



TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER HEAD RESULTANT

THC ,841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T01X63

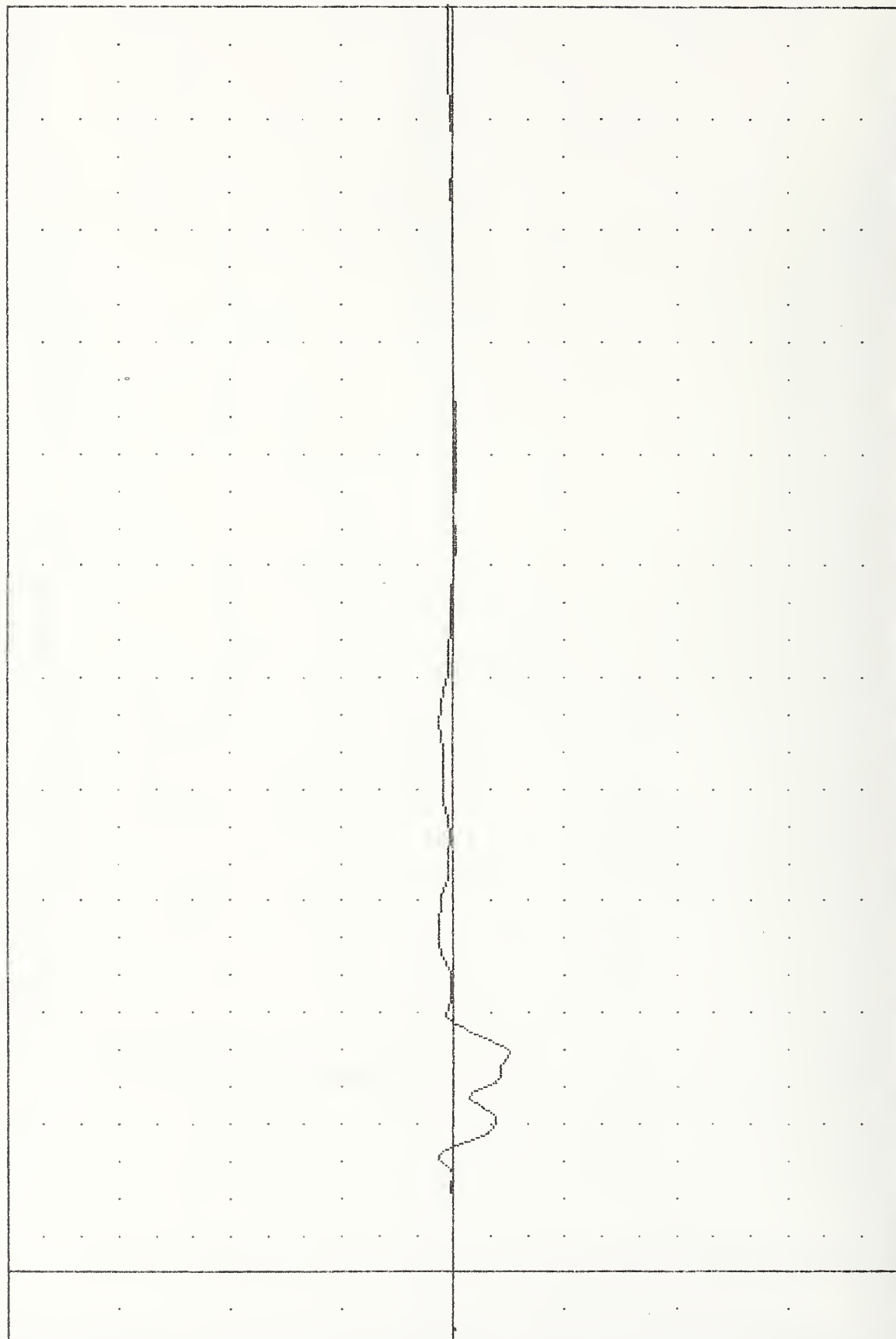
PLUF DATE 17NOV-84 16:03:24

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -24.880 58.13, 6.87 * 90.62

ACCELERATION (G)

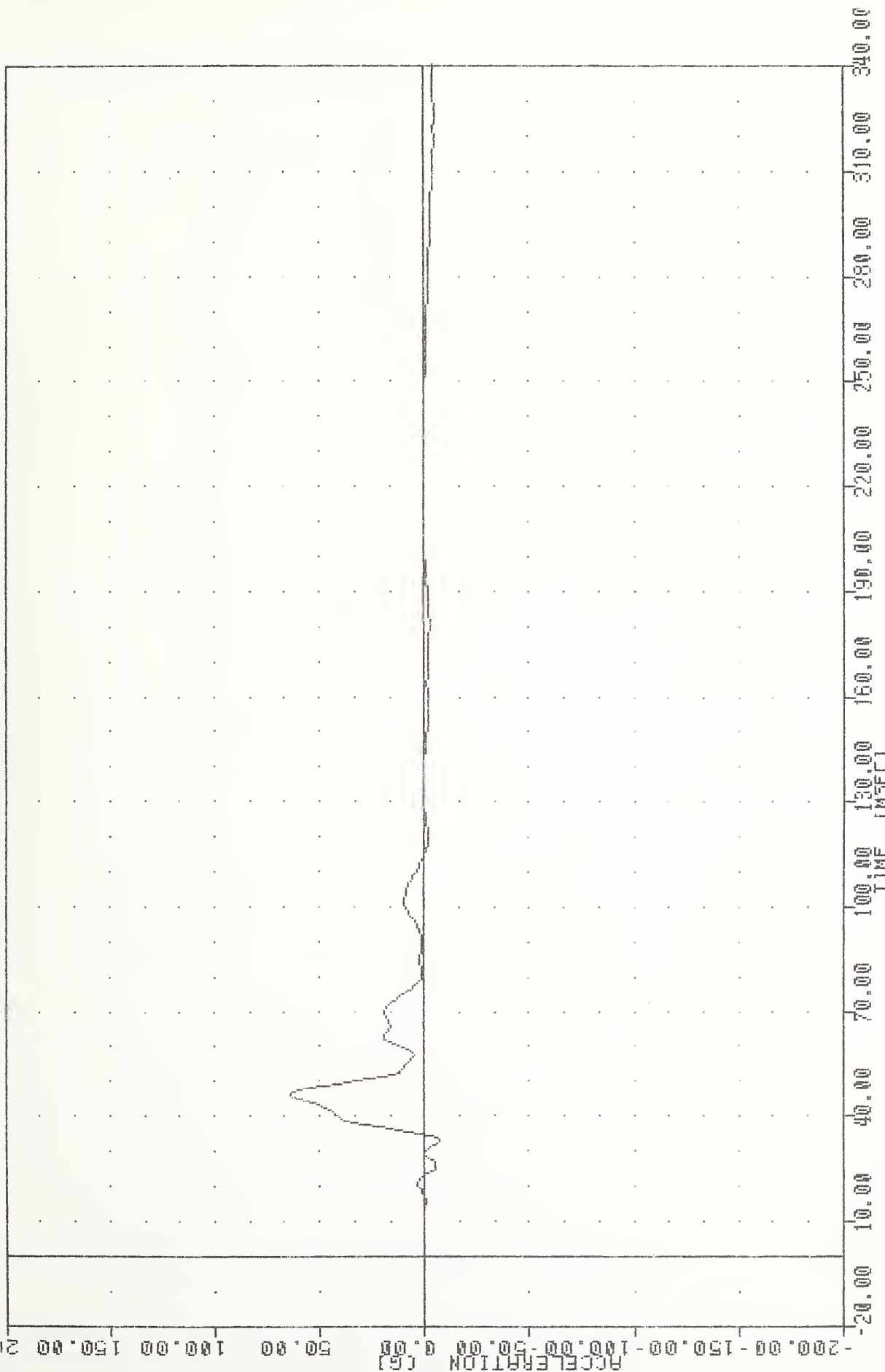
200.00 150.00 100.00 50.00 0.00 -50.00 -100.00 -150.00 -200.00



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE ACCELERATION X AXIS

INC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T01Y63
 PLU1 DATE 17NOV-84 16:03:24
 FILTER = HSR1 136/ 189/ -50
 MIN. MAX VALUES = -7.17e 32.50 , 63.37 e 45.62

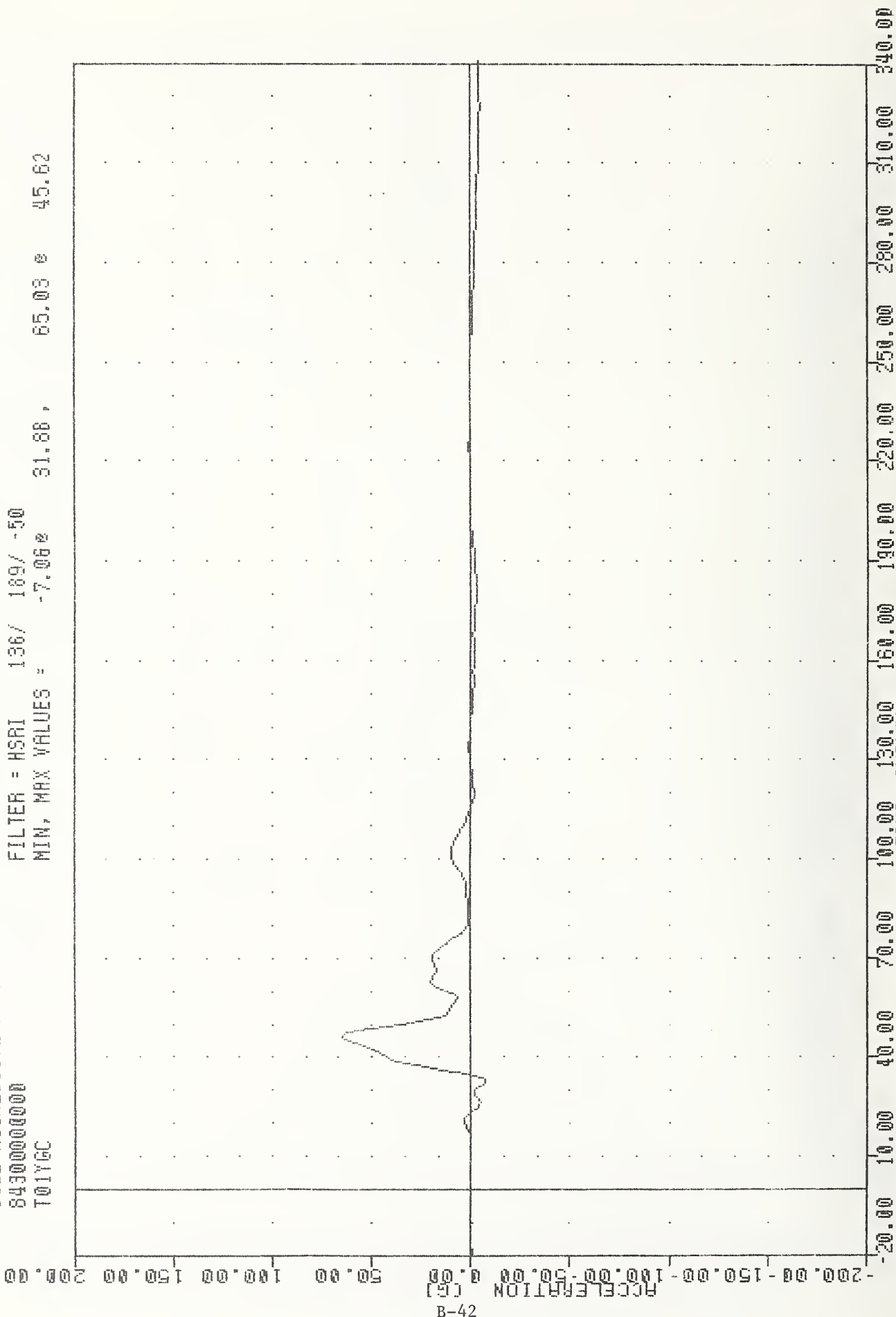


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE ACCELERATION Y AXIS

IRC _____, 841W26
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T01YGC

PLUI DATE 17NOV-84 16:03:24

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -7.060 31.88, 65.03 45.82

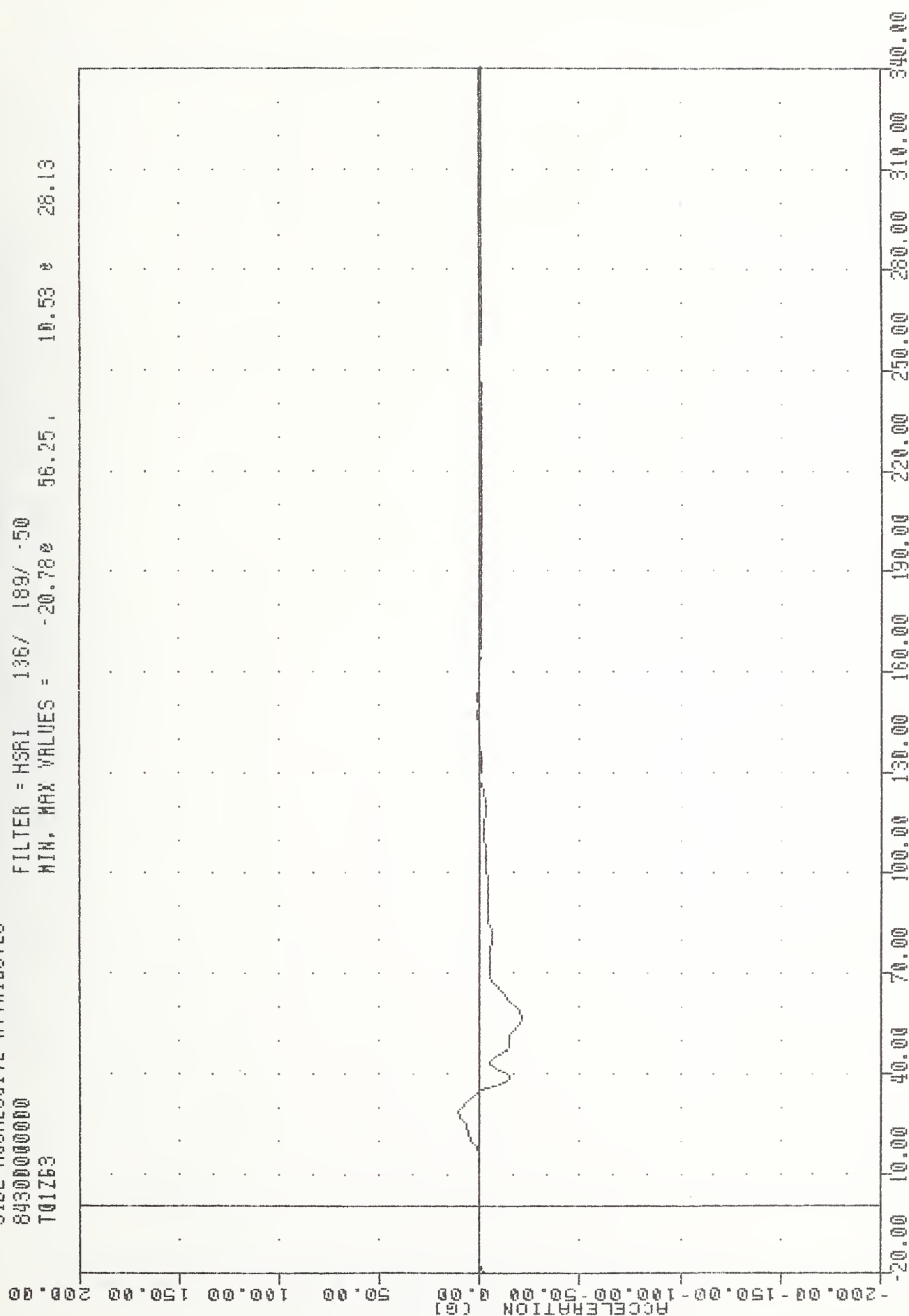


INC 841026
 SIDE AGGRESSIVE ATTRIBUTES
 8430000000
 T01753

PLU1 DATE 1-NOV-84 16:03:24

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -20.780 56.25 10.53 28.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE ACCELERATION Z AXIS

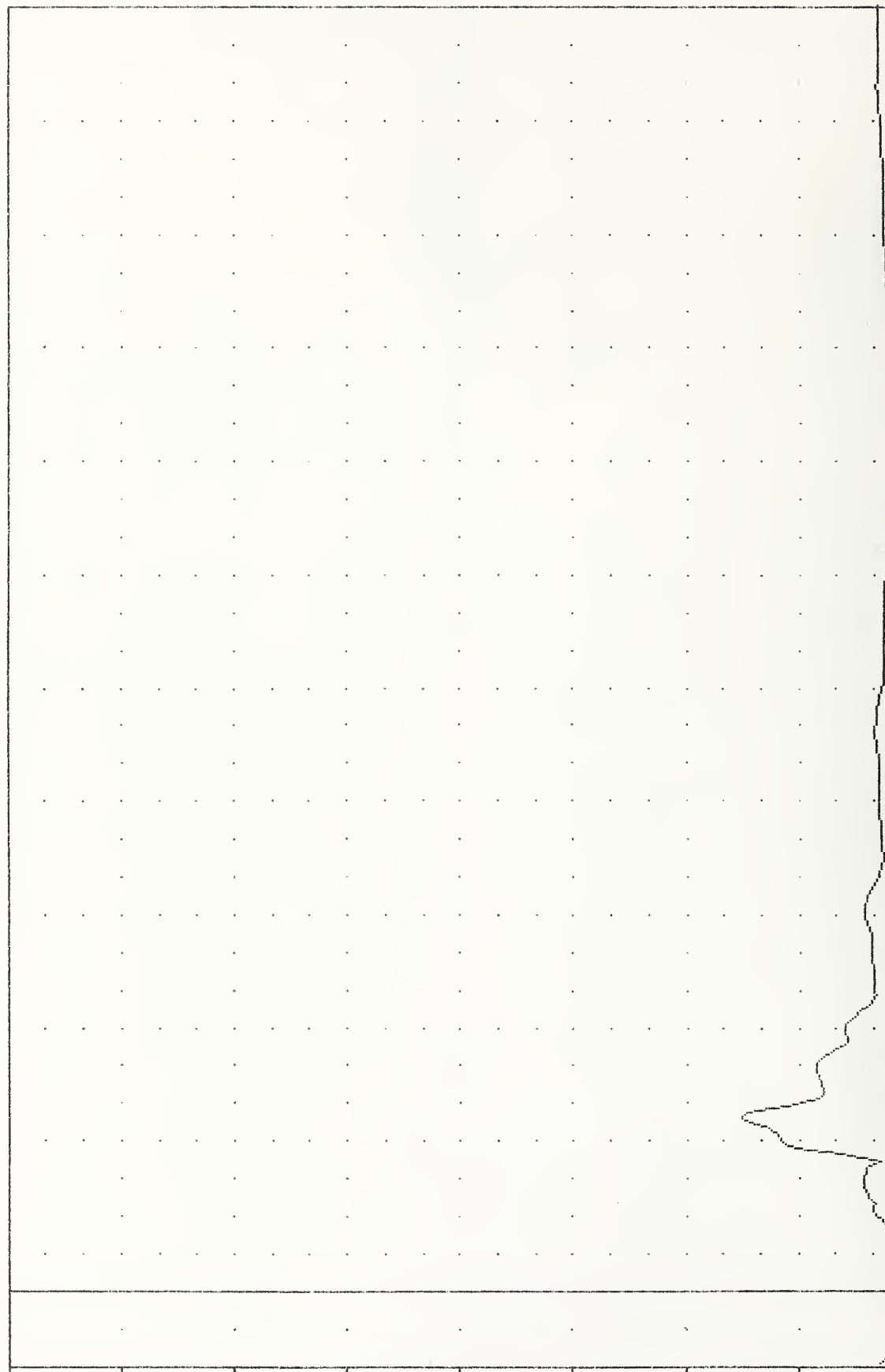
IRL 841026
 SIDE AGGRESSIVE ATTRIBUTES
 84300000000
 TOIR63

PLU1 UH1E 17NDV-84 16:03:24

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.14e 8.75, 64.92 e 45.62

ACCELERATION (G)



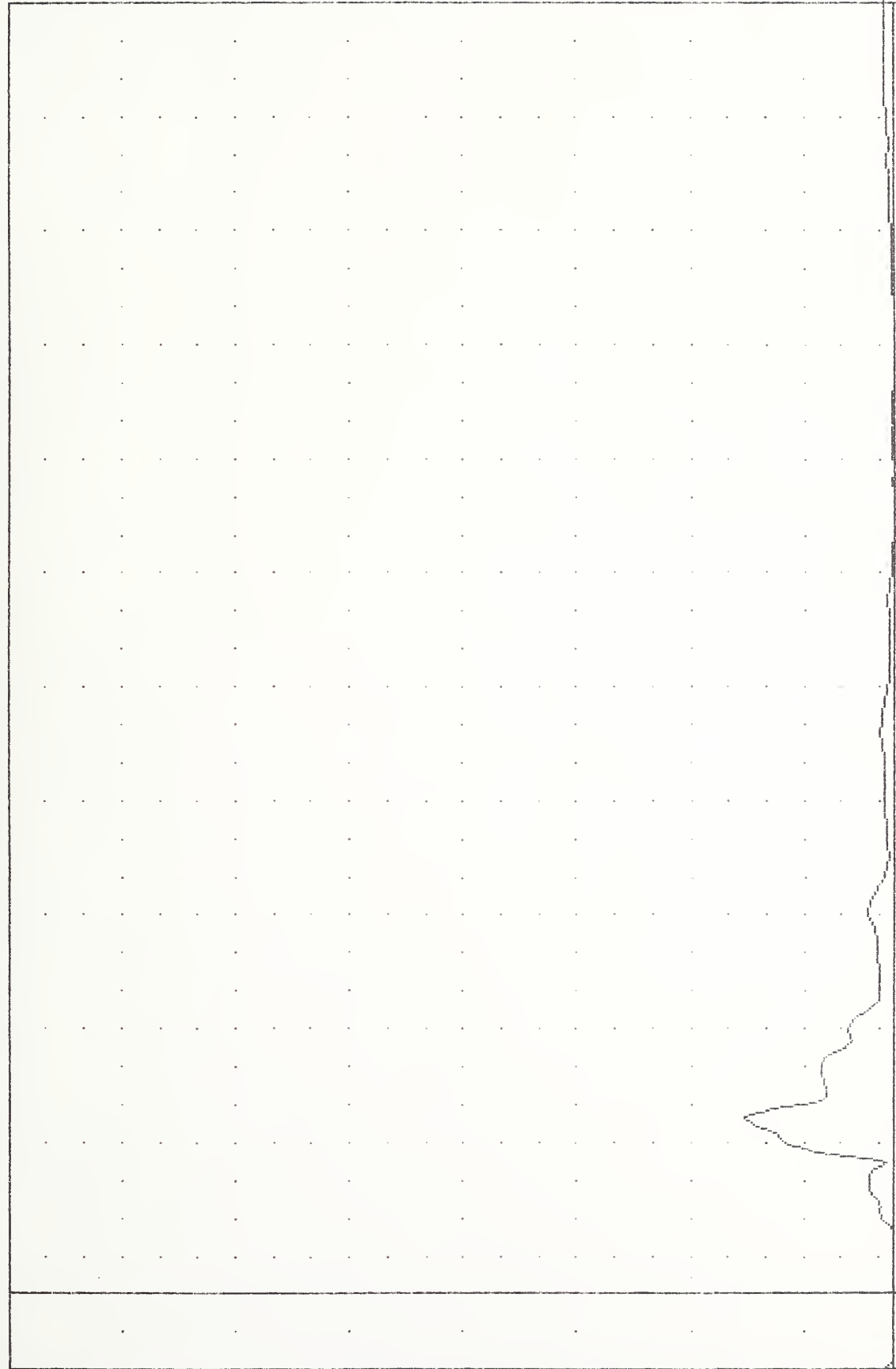
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE RESULTANT

IHC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T01R6C

PLOT DATE 1-NOV-84 16:04:53
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = 0.17e -14.37 , 66.54 e 45.62

ACCELERATION (G)
 -10.00 40.00 90.00 140.00 190.00 240.00 290.00 340.00 390.00



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

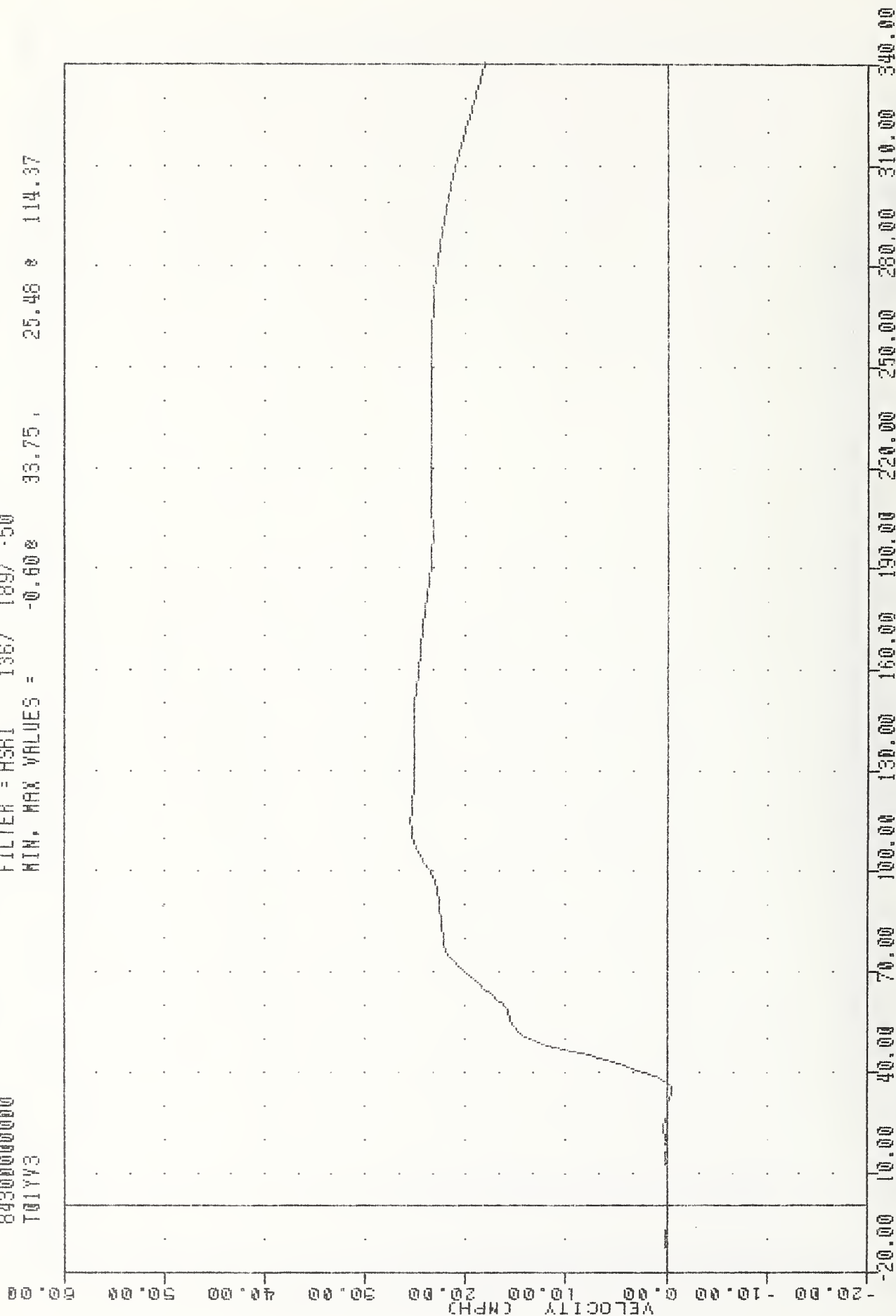
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE RESULTANT USING T01Y6C

IRL
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T01YV3

FLUT UNIE 1-NOV-84 16:05:10

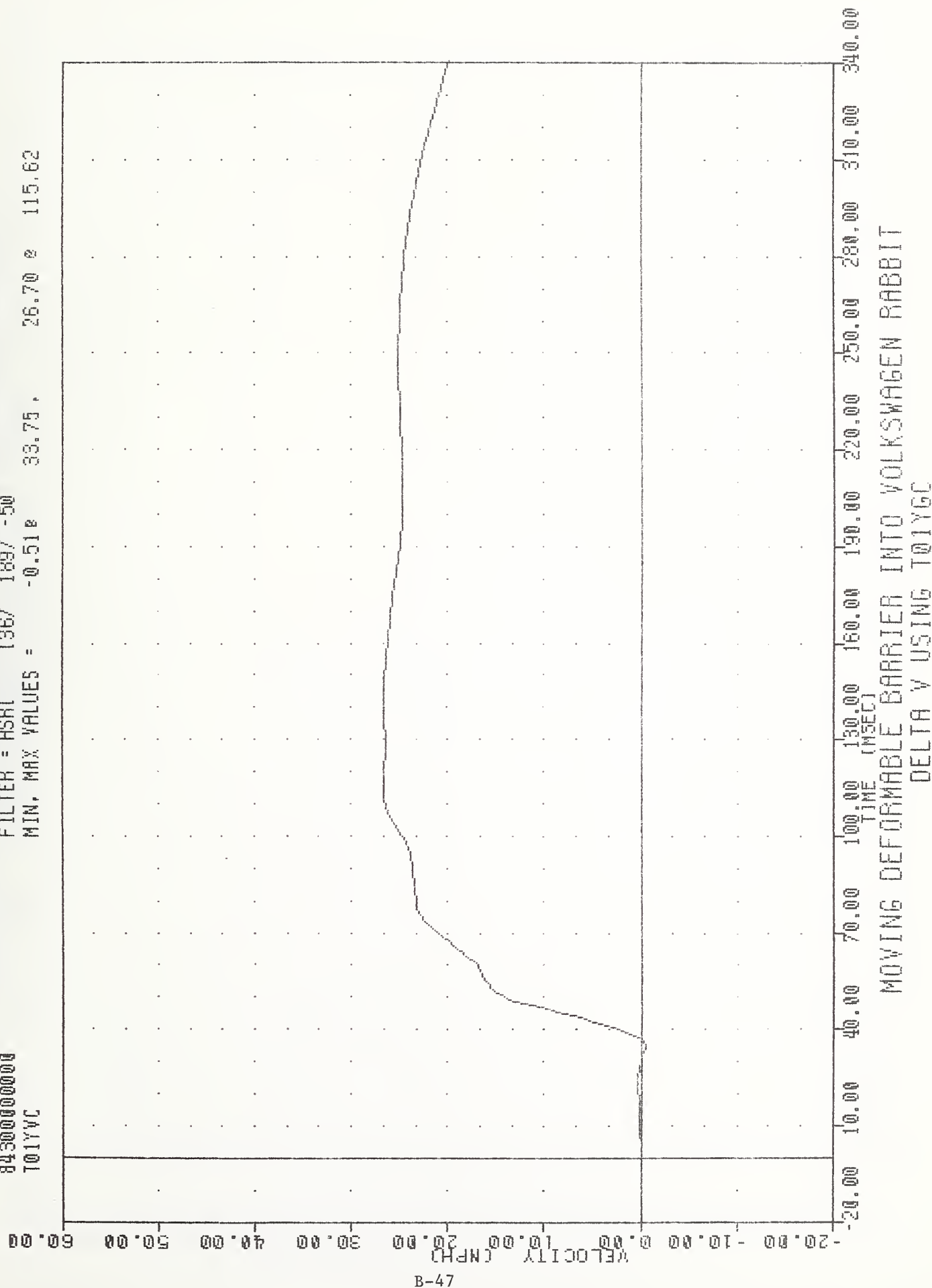
FILTER = HSRI 136/ 189/ .50

MIN. MAX VALUES = -0.600 33.75 , 25.48 * 114.37



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T01YV3

IRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T01YVC
 FLUI DATE 1-NOV-84 16:05:10
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -0.518 33.75, 26.70 @ 115.62

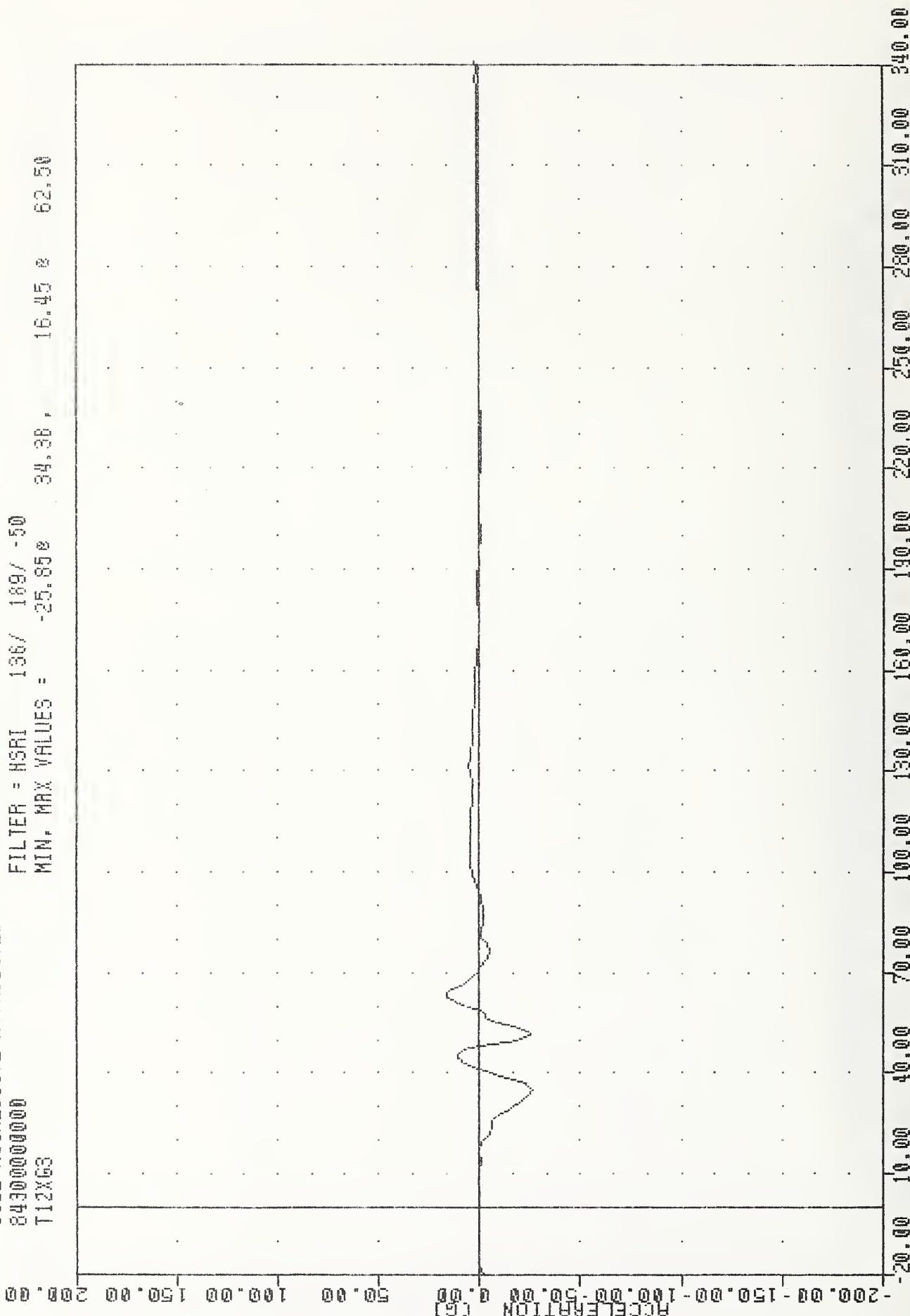


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T01Y6C

IRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T12XG3

PLUT DATE T-NOV-84 16:03:24

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -25.850 34.38 16.45 62.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LOWER SPINE ACCELERATION X AXIS

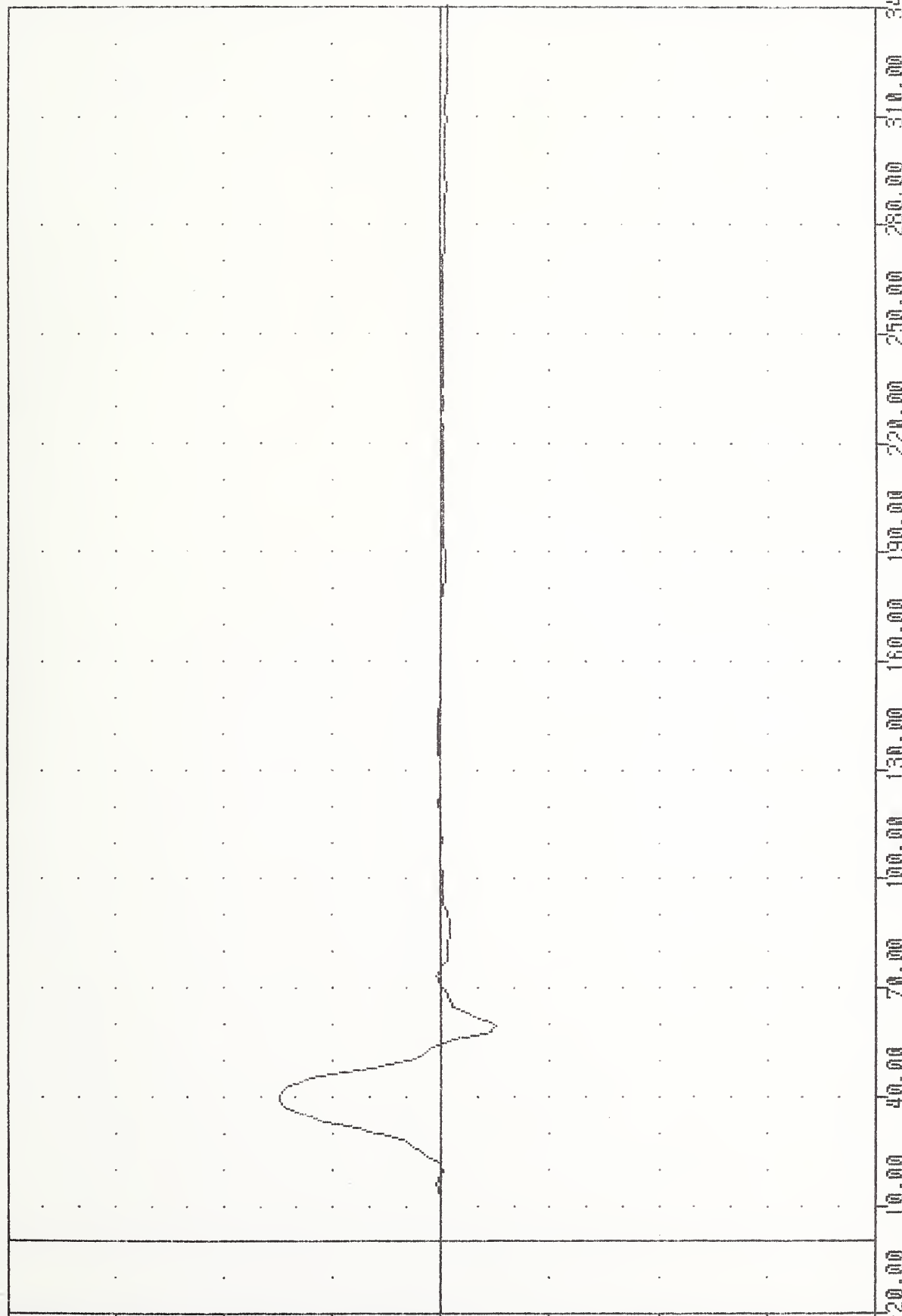
IHC , 841026
SIDE AGGRESSIVE ATTRIBUTES
84300000000
T12Y63

PLU1 DATE 1-NOV-84 16:03:24

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -24.90e 58.75 , 74.79 e 38.75

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE ACCELERATION Y AXIS

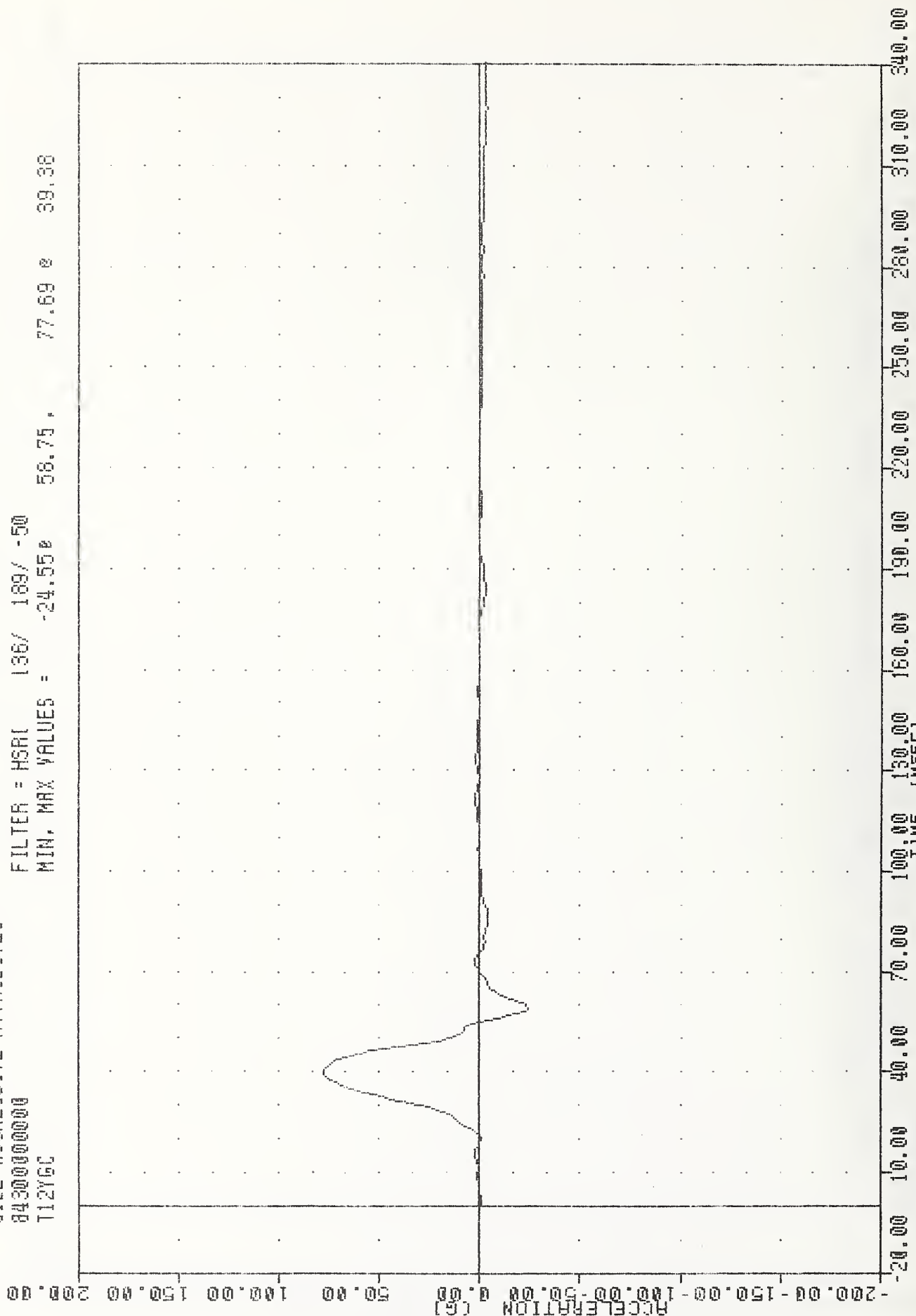
IRC

DATE

IRC 841026
SIDE AGGRESSIVE ATTRIBUTES
84300000000
T12Y6C

PLUT DATE 17 NOV 84 16:03:24

FILTER = HSR 136/ 189/ -50
MIN, MAX VALUES = -24.55e 58.75e 77.69e 39.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE ACCELERATION -2 Y AXIS

INCL 841026 PLOT DATE 1-NUV-84 16:03:24

SIDE AGGRESSIVE ATTRIBUTES

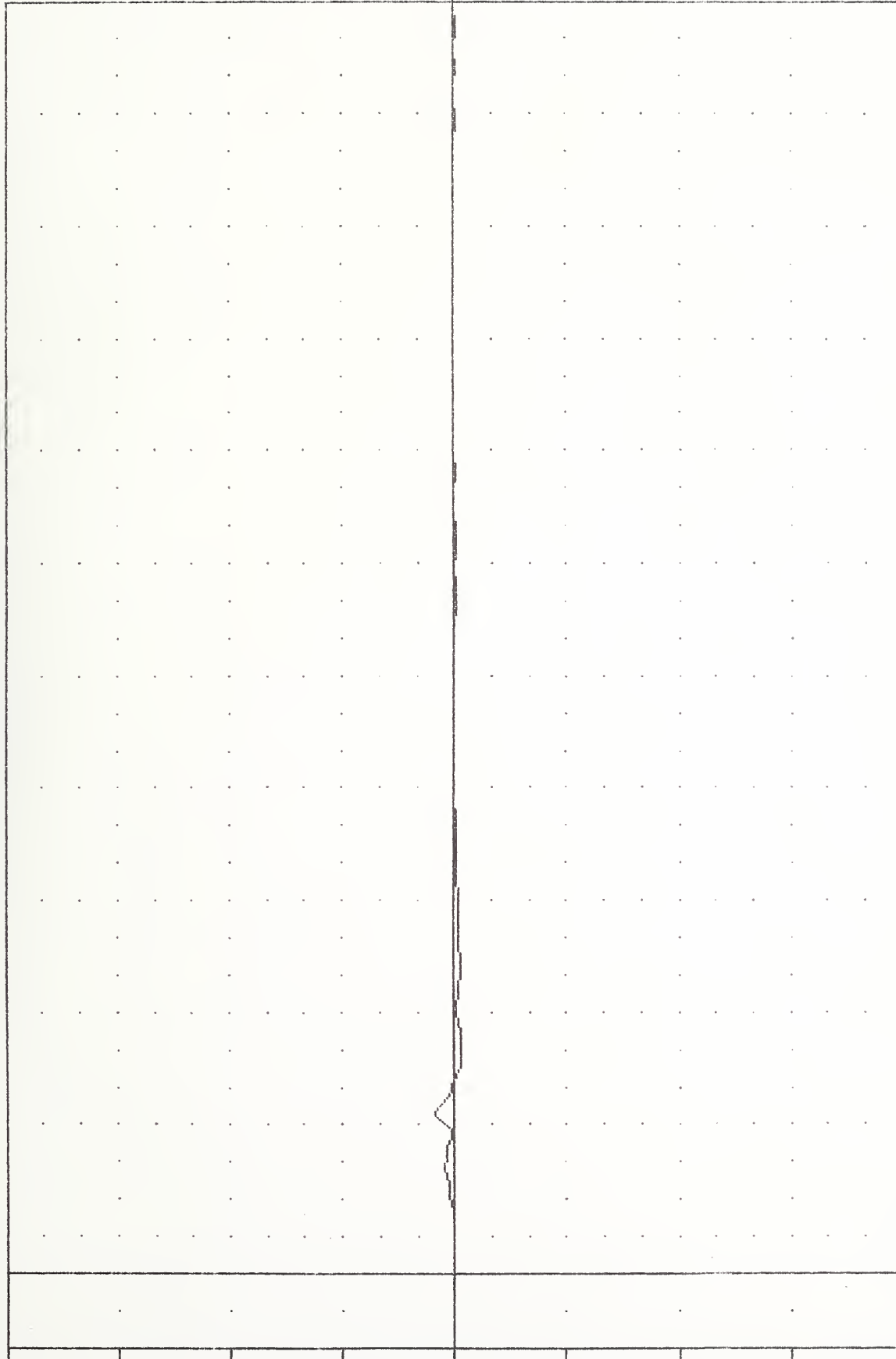
843000000000

T12763

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -3.28g 56.87, 8.34 g 42.50

ACCELERATION [G]



-20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE ACCELERATION Z AXIS

IHC 841025
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T12R63

FL01 DATE 1-NOV-84 16:03:24
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = 0.048 8.75 75.91 e 37.50

ACCELERATION (G)
 -10.00 40.00 90.00 140.00 190.00 240.00 290.00 340.00 390.00



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)
 MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LOWER SPINE RESULTANT

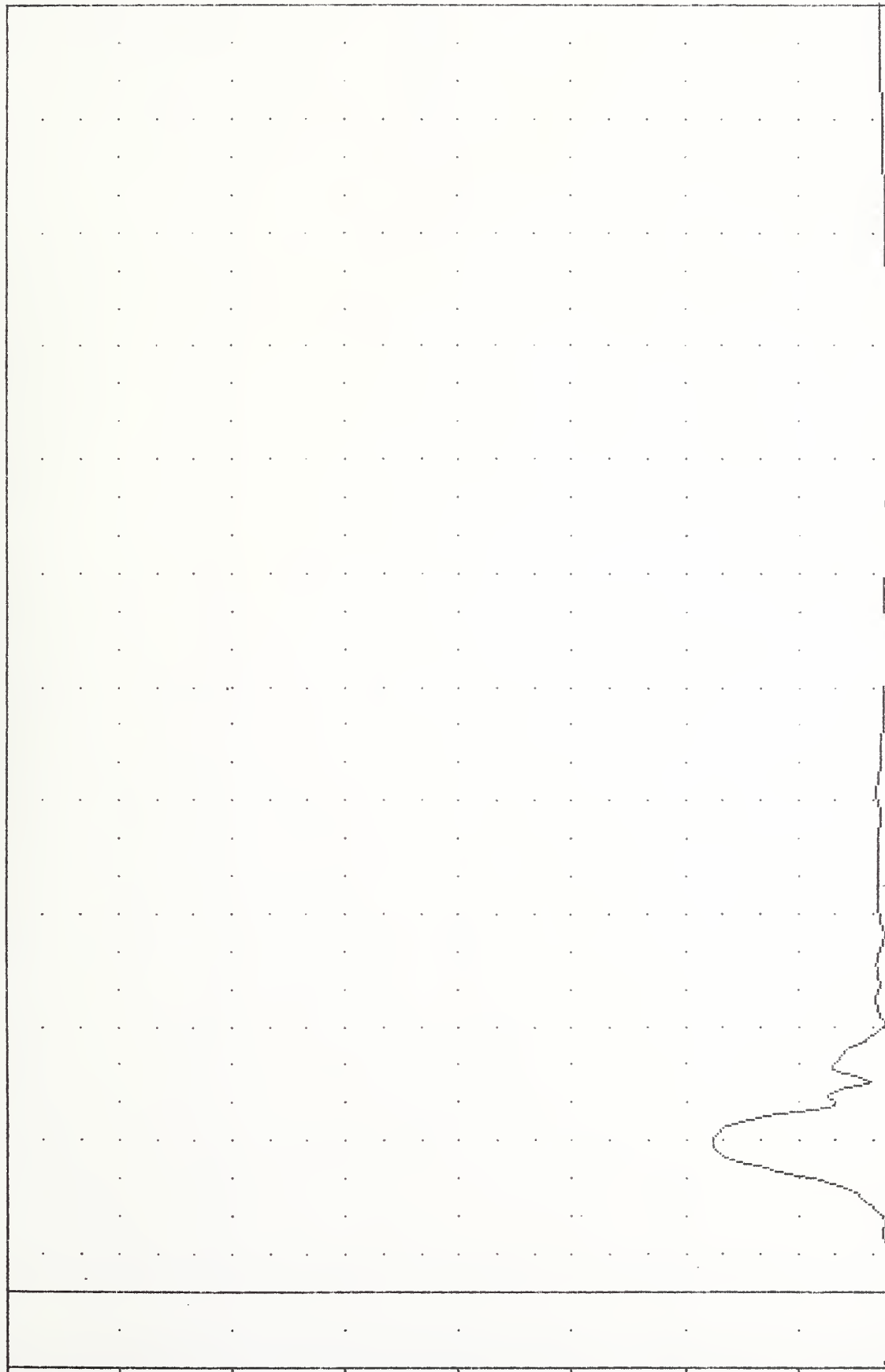
IRC 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T12R6C

PLUT DATE 1-MAY-84 16:04:53

FILTER = HSR1 136/ 189/ -50

MIN. MAX VALUES = 0.070 -3.13, 78.26 0 38.75

ACCELERATION (G)



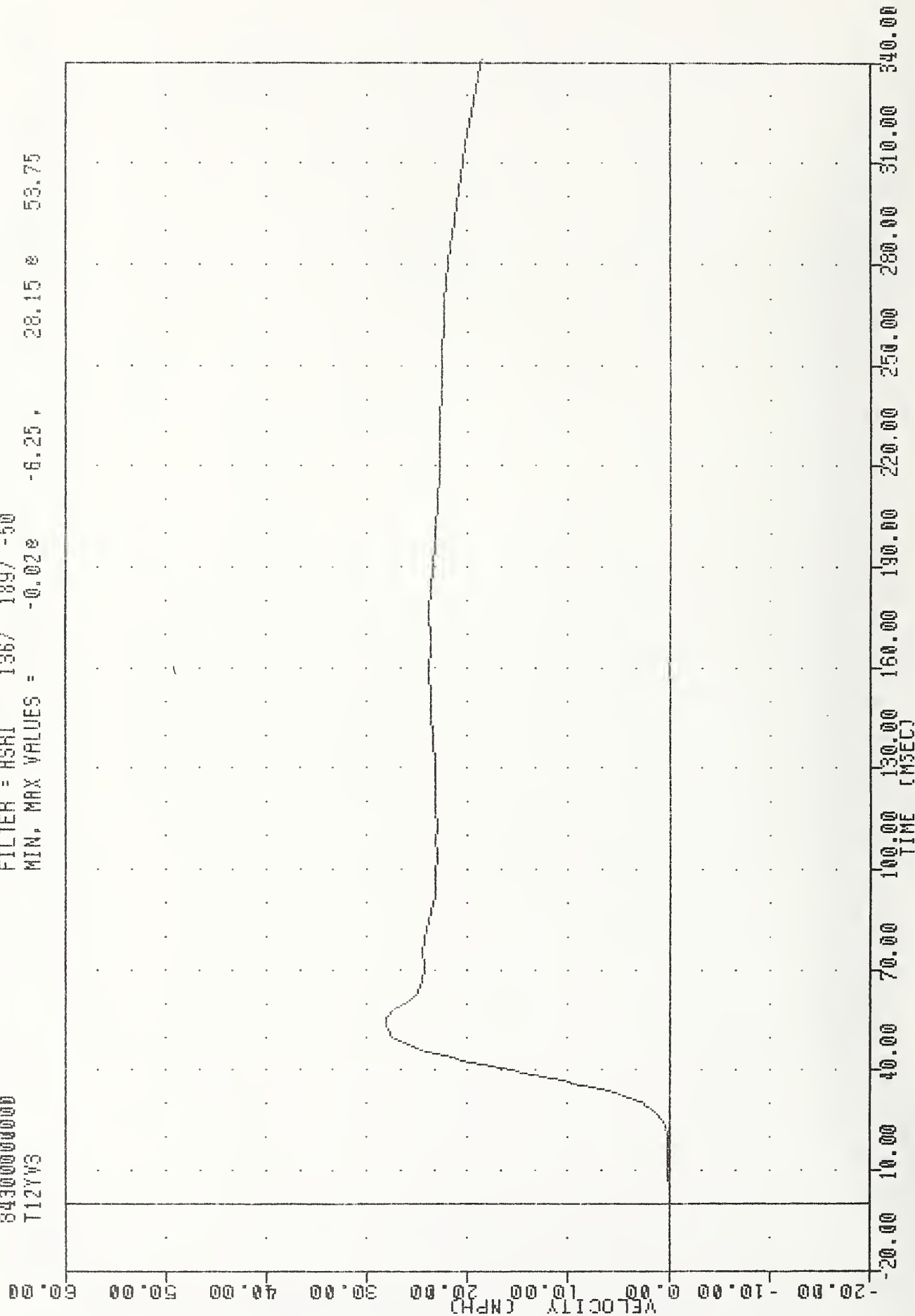
-20.00 10.00 50.00 100.00 150.00 200.00 250.00 300.00 340.00

TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LOWER SPINE RESULTANT USING T12Y6C

IML 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T12YV3

FLUT DATE 1-NOV-84 16:05:10
 FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -0.020 -6.25 28.15 53.75



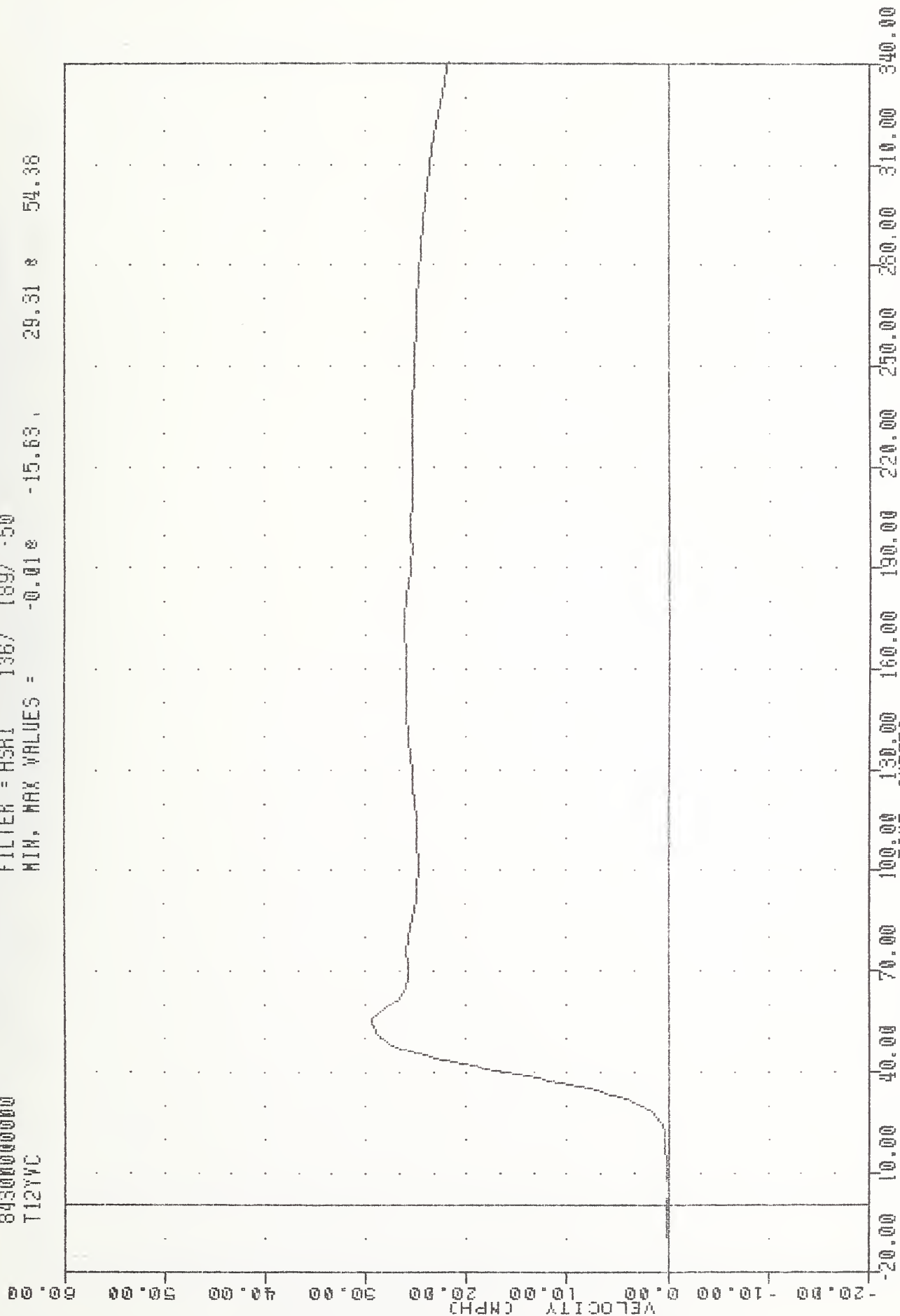
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12Y63

IHC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 T12YWC

FLU1 DATE 1-MAY-84 15:05:10

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.018 -15.63 29.31 * 54.38

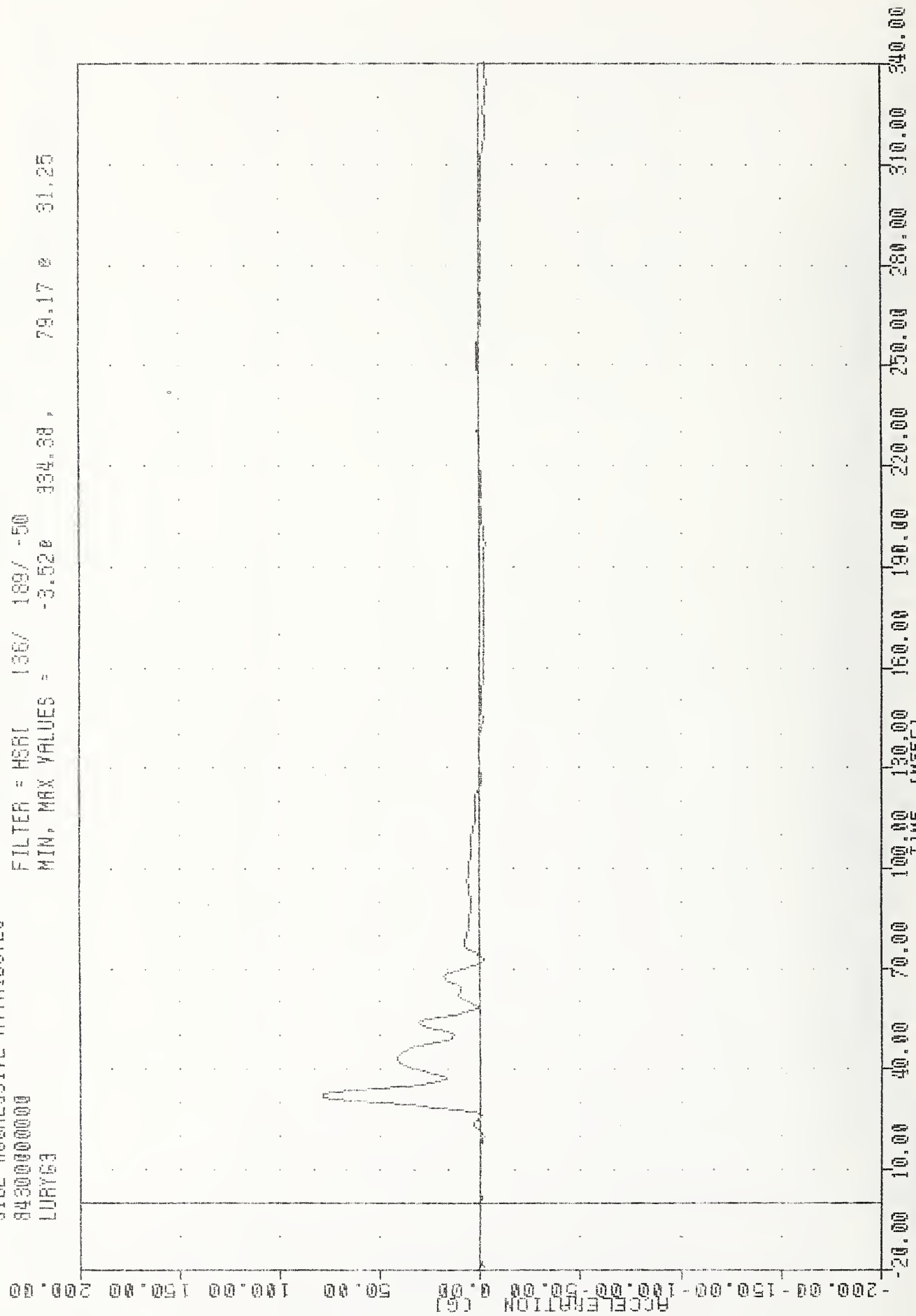


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12YGC

INL 9011077

INL
841026
SIDE AGGRESSIVE ATTRIBUTES
84300000000
LURY63

PLU1 DATE 1-NDV-84 16:03:24
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -3.520 334.38, 79.17 0 31.25



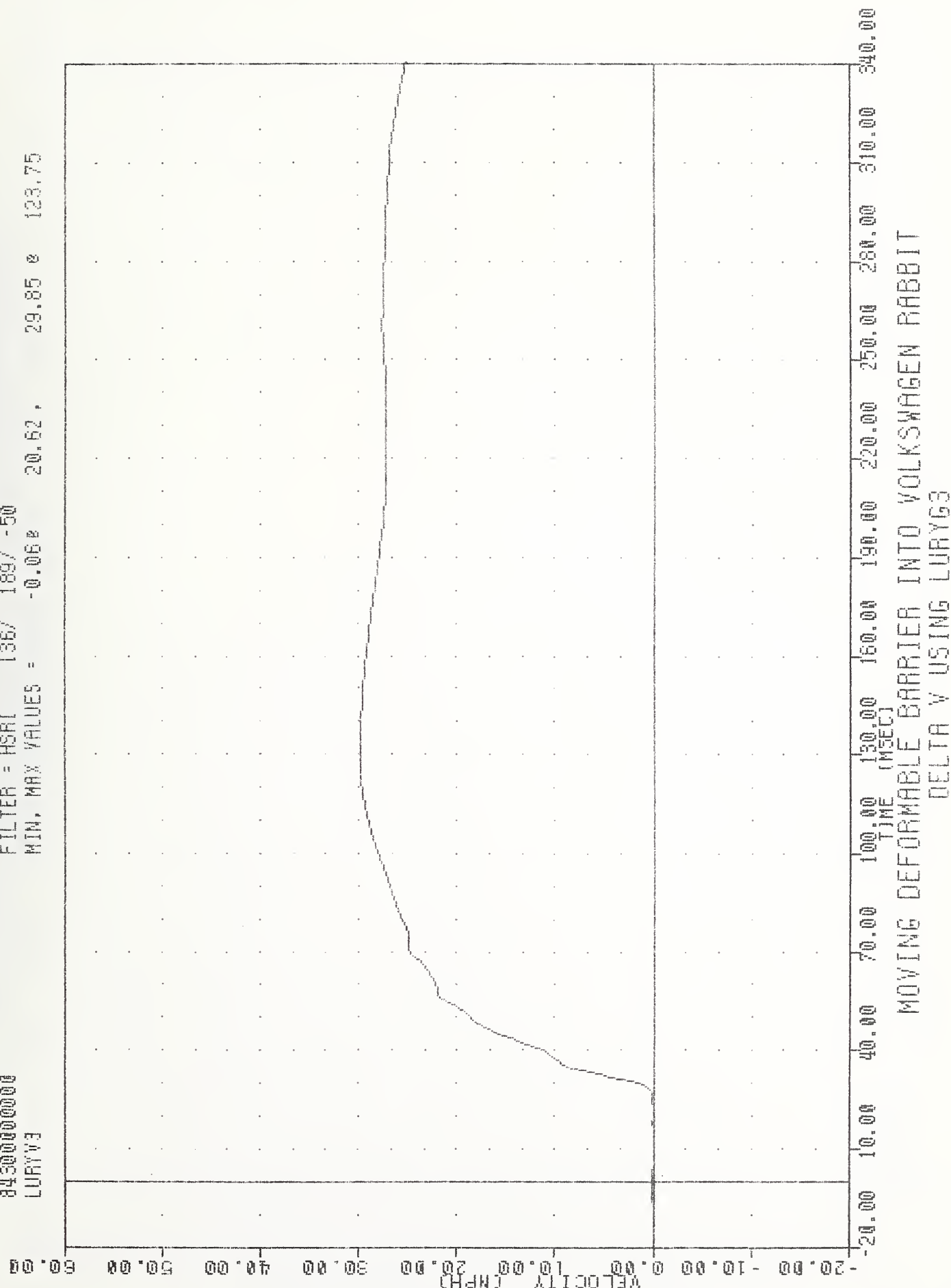
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT UPPER RIB ACCELERATION Y AXIS

IRL 841026
SIDE AGGRESSIVE ATTRIBUTES
84300000000
LURYV3

PLU1 UR1E 1-MOV-84 18:05:10

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.062 20.62, 29.85 0 123.75



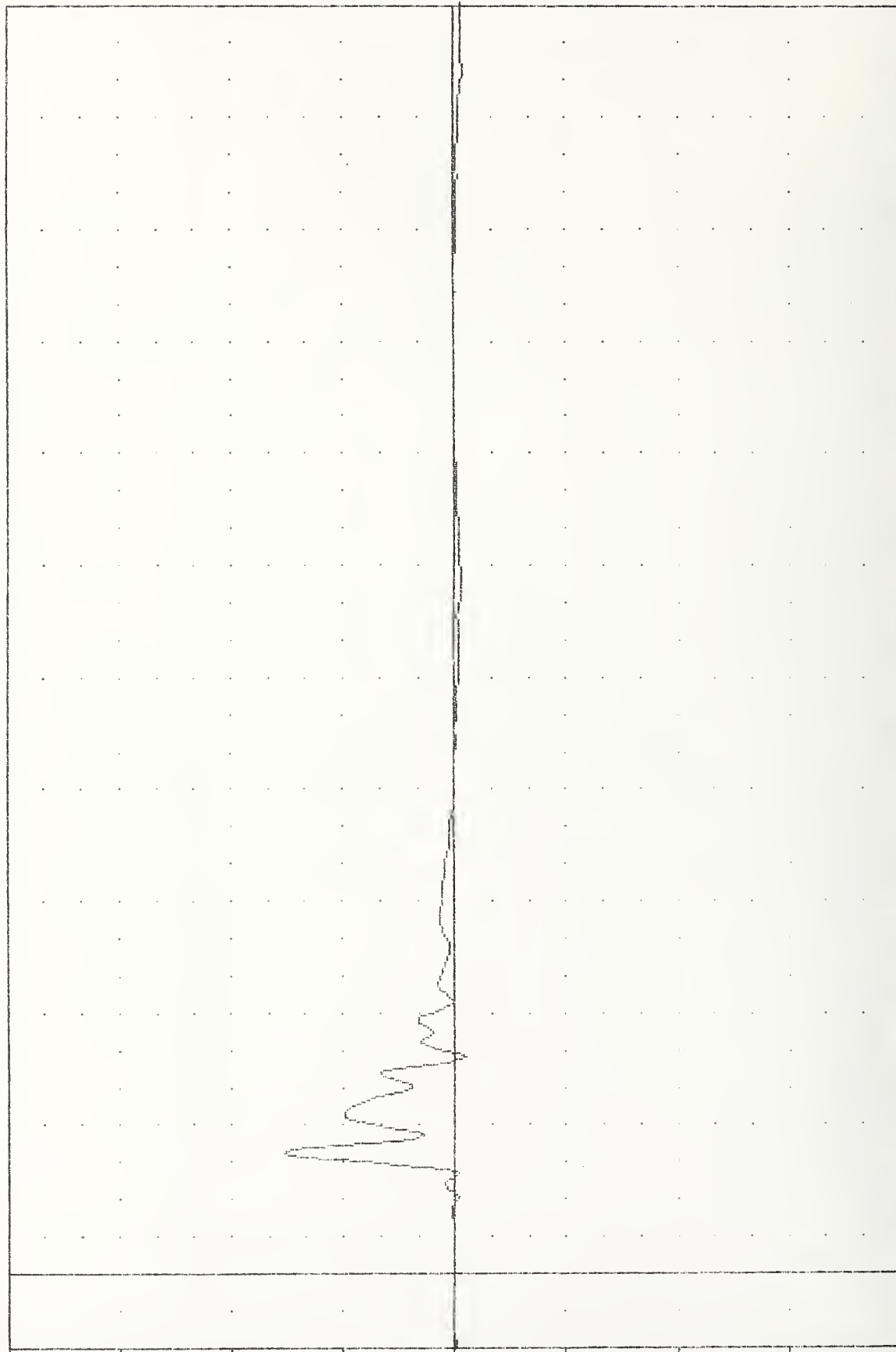
INL , 841W26
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LUR16C

PLU1 DATE 1-NOV-84 16:03:24

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -4.60% 57.50 , 76.33 % 31.88

ACCELERATION [G]



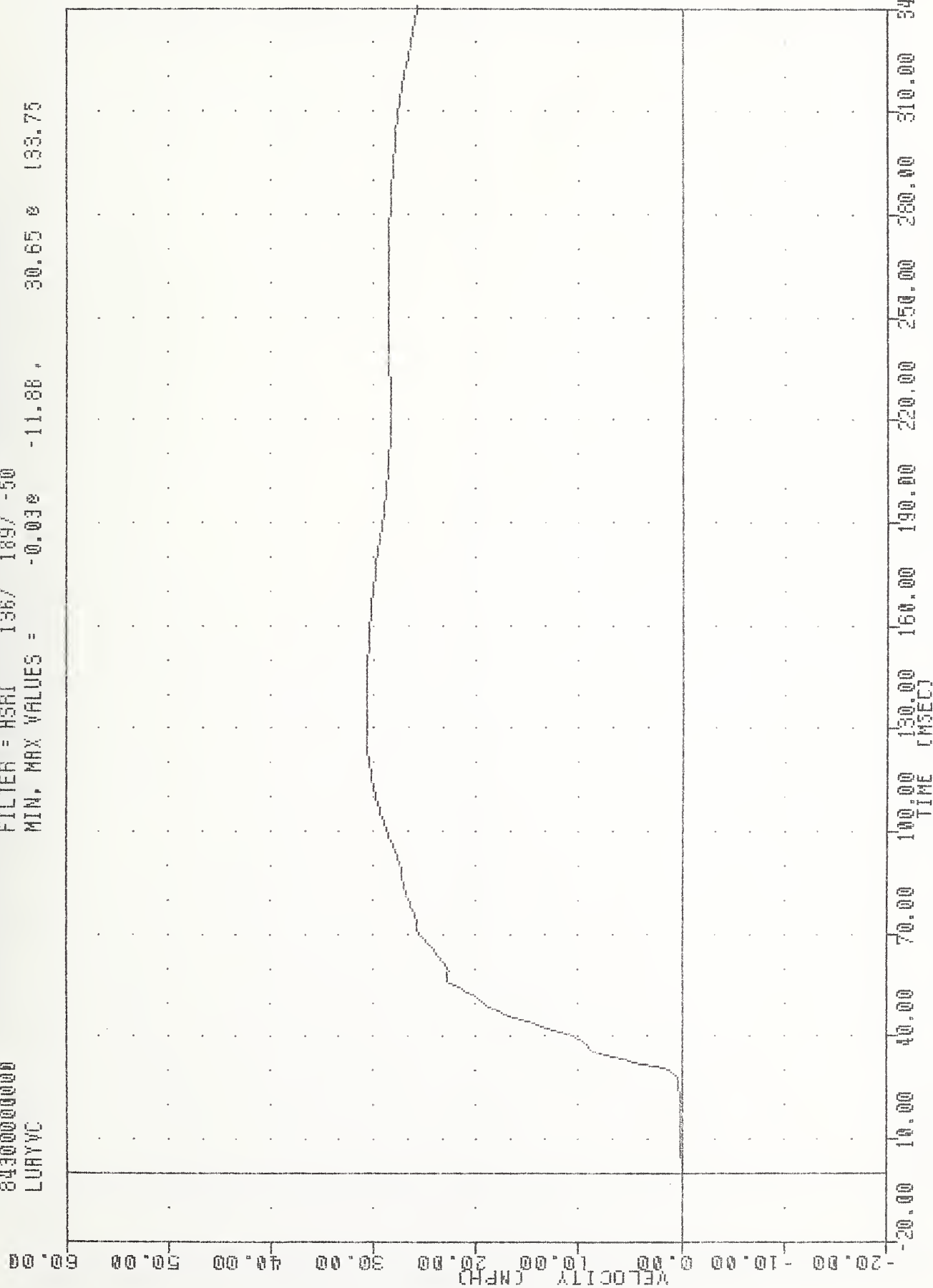
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LEFT UPPER RIB ACCELERATION -2 Y AXIS

IHC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LURAYVC

PLUI UNIT 1-NOV-84 16:05:10

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.038 -11.88 30.65 133.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LURAYVC

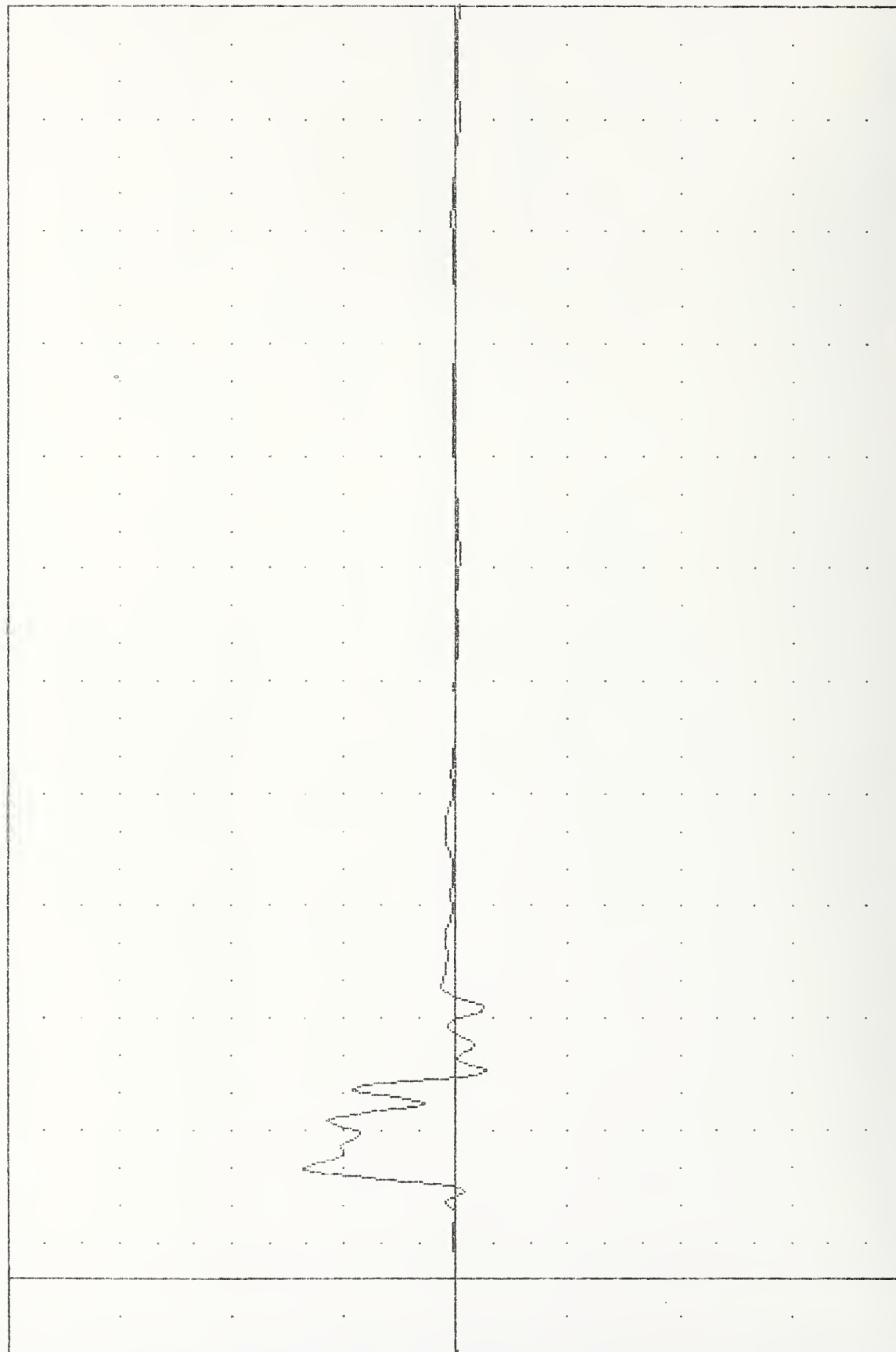
IAC ,841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LLAYES

PLU: DHIE 1-NOV-84 15:03:24

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -13.010 55.00 67.65 28.75

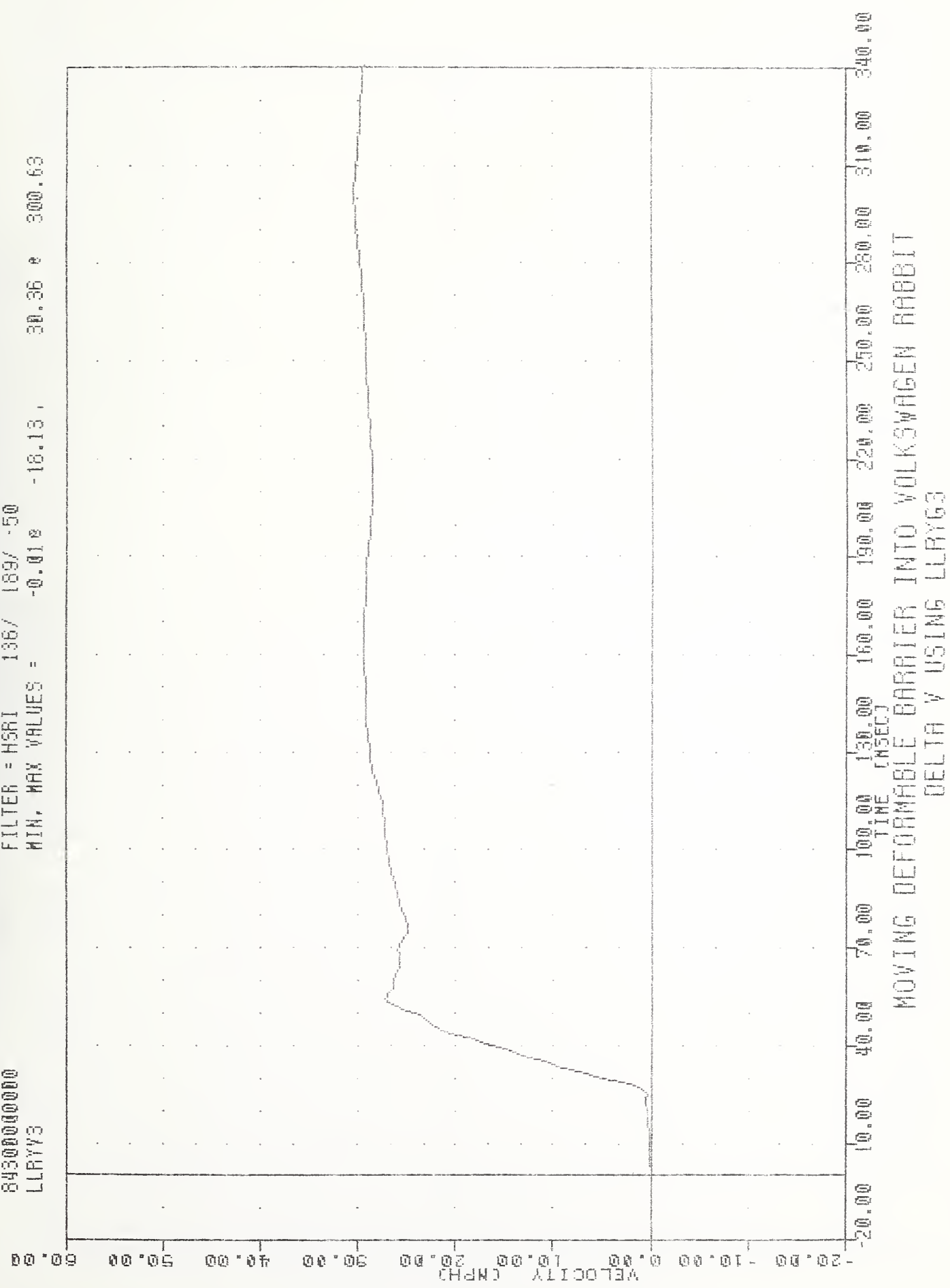
ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LEFT LOWER RIB ACCELERATION Y AXIS

IHC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 84300000000
 LLRYV3
 PLU1 UH1E 1-NOV-84 16:05:10
 FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.012 -18.13, 30.36 e 300.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLRYG3

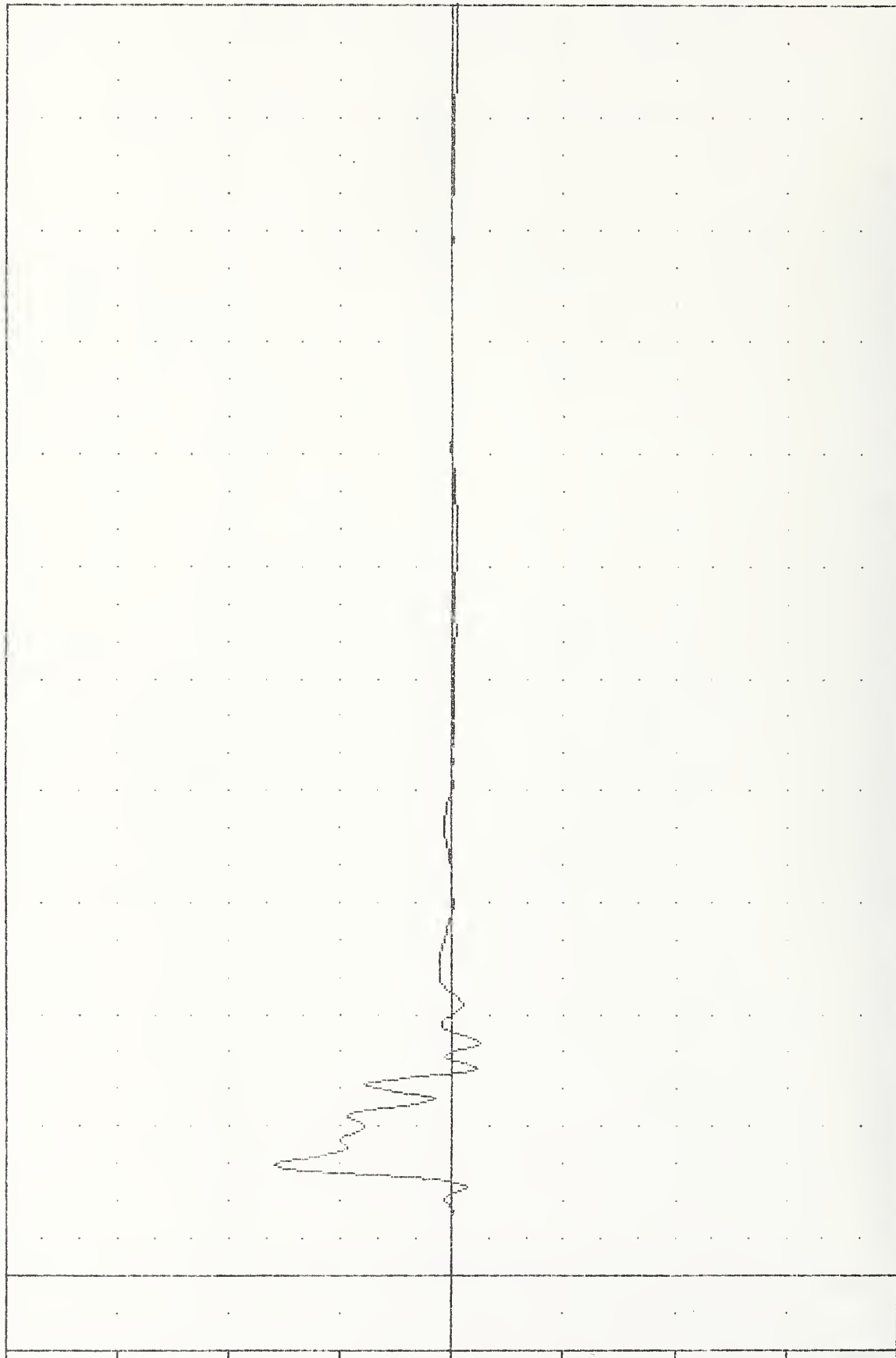
INC 841026
SIDE AGGRESSIVE ATTRIBUTES
84300000000
LLRY6C

PLU1 DATE 1-NOV-84 15:03:24

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -12.10% 61.87, 79.33 @ 28.75

ACCELERATION (G)



-200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00 150.00 200.00 250.00 300.00 340.00

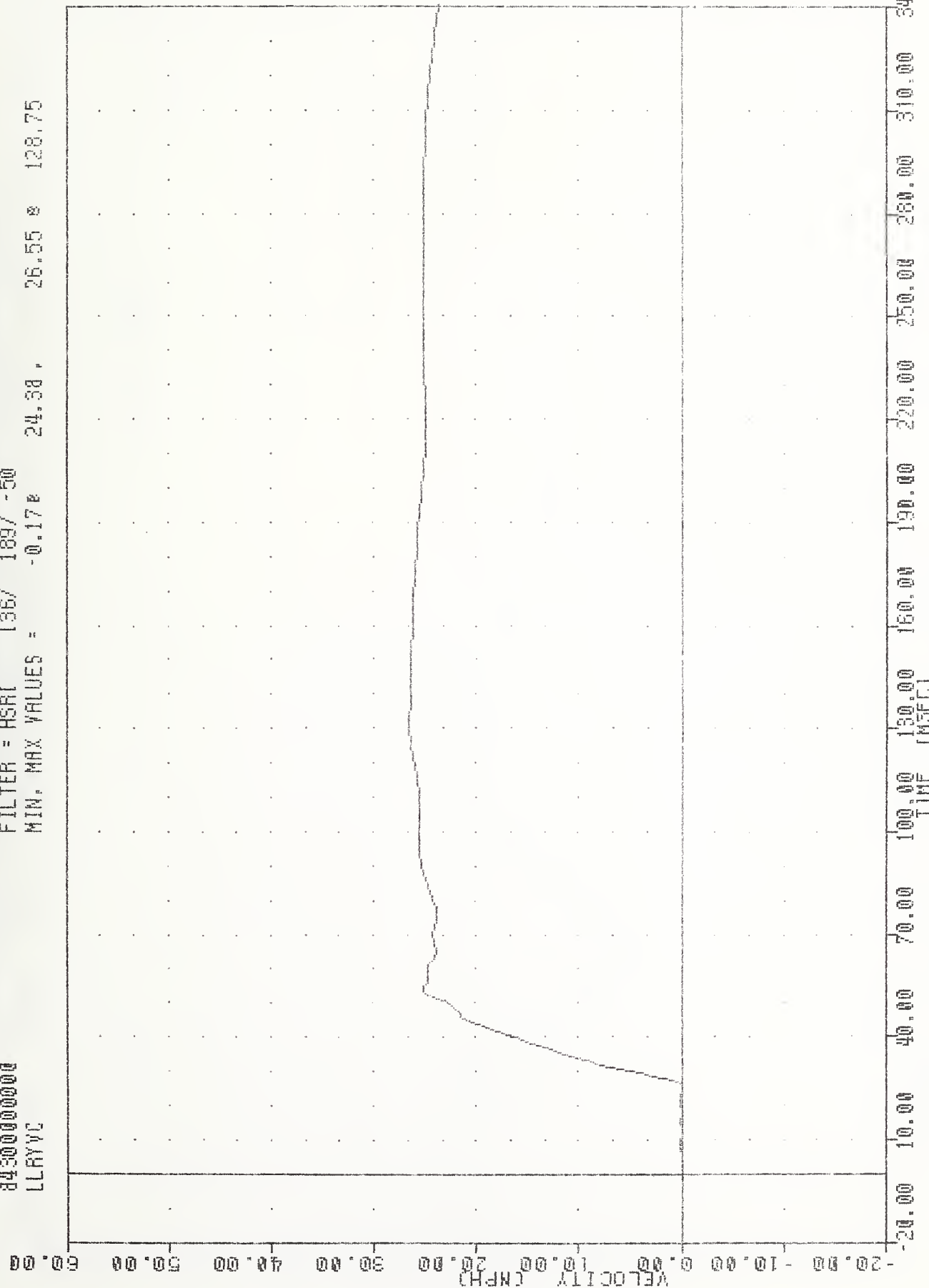
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT LOWER RIB ACCELERATION -2 Y AXIS

TRC , 841026
SIDE AGGRESSIVE ATTRIBUTES
84300000000
LLAYVC

PLU1 UH1E 1-NOV-84 16:05:10

FILTER = HSR1 136/ 189/ -50

MIN. MAX VALUES = -0.178 24.38 , 26.55 8 128.75



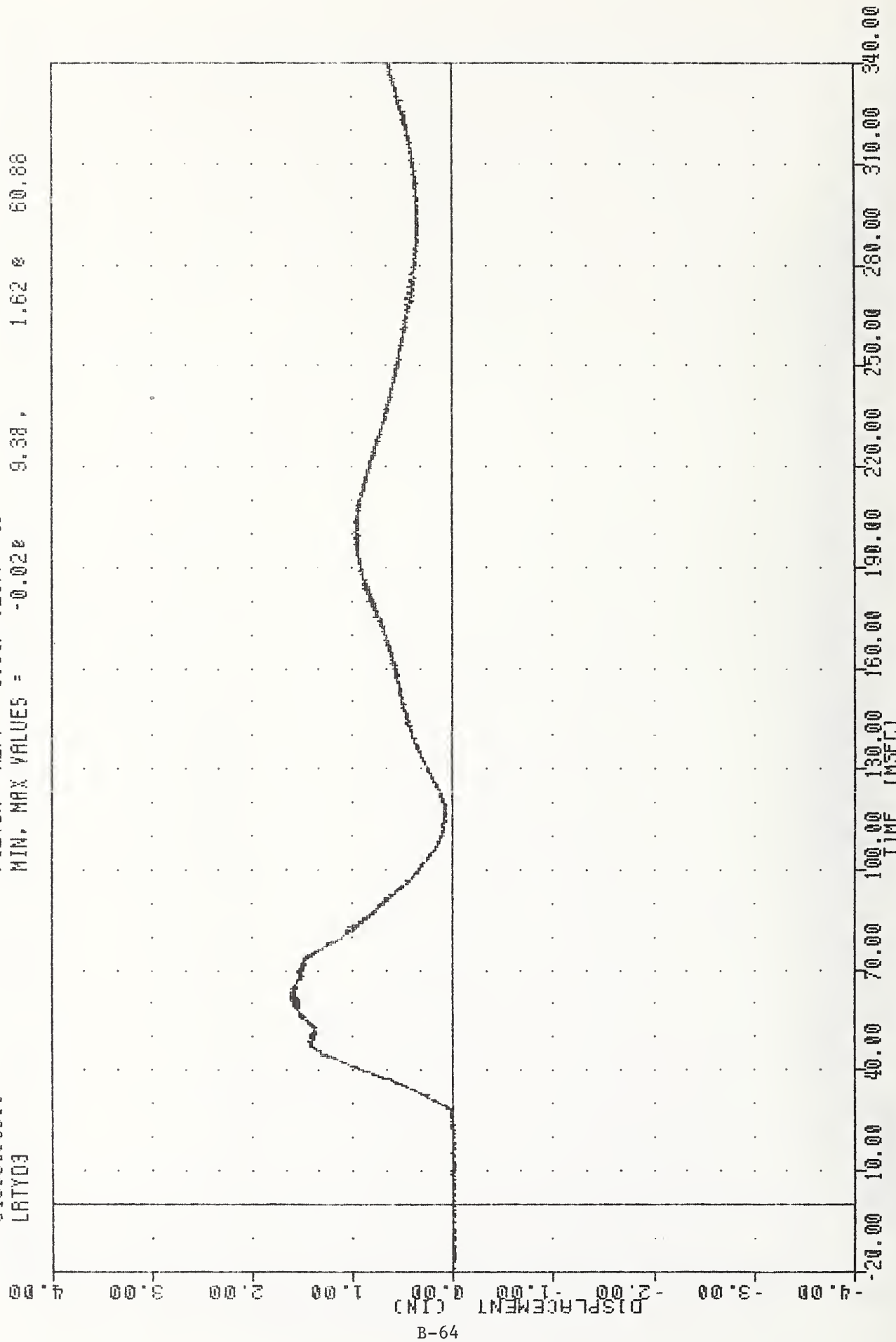
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA W USING LLAYVC

TRC 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LRTYD3

PLOT DATE 2-NOV-84 08:46:48

FILTER = ALPF 1650/ 5217/ -40

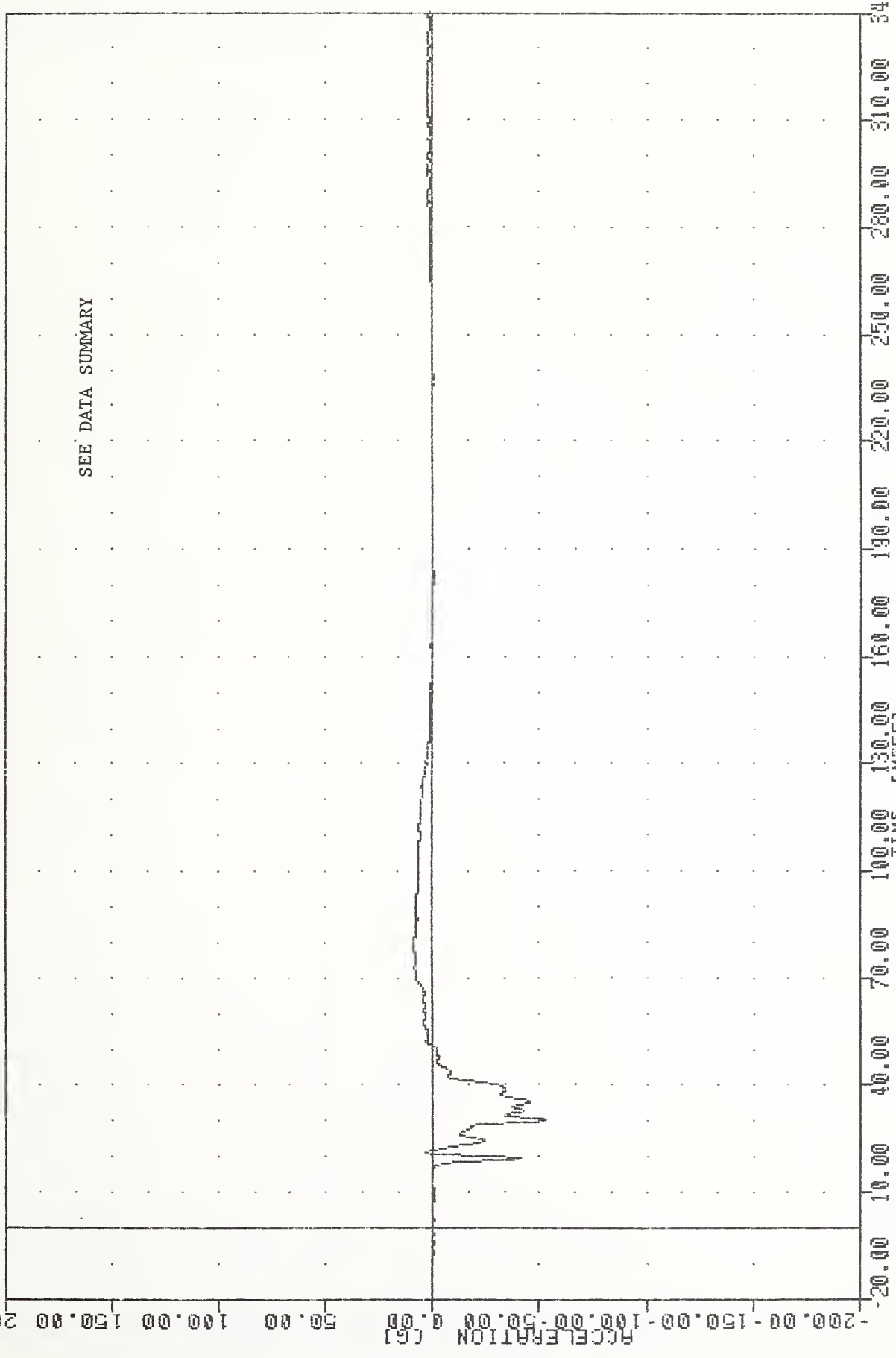
MIN, MAX VALUES = -0.02e 9.38, 1.62 e 60.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LEFT RIB TO SPINE DISPLACEMENT INCHES

TRC 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 PEVX63

PLOT DATE 2-NOV-84 08:46:48
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 30.13, 8.90 & 78.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER PELVIS ACCELERATION X AXIS

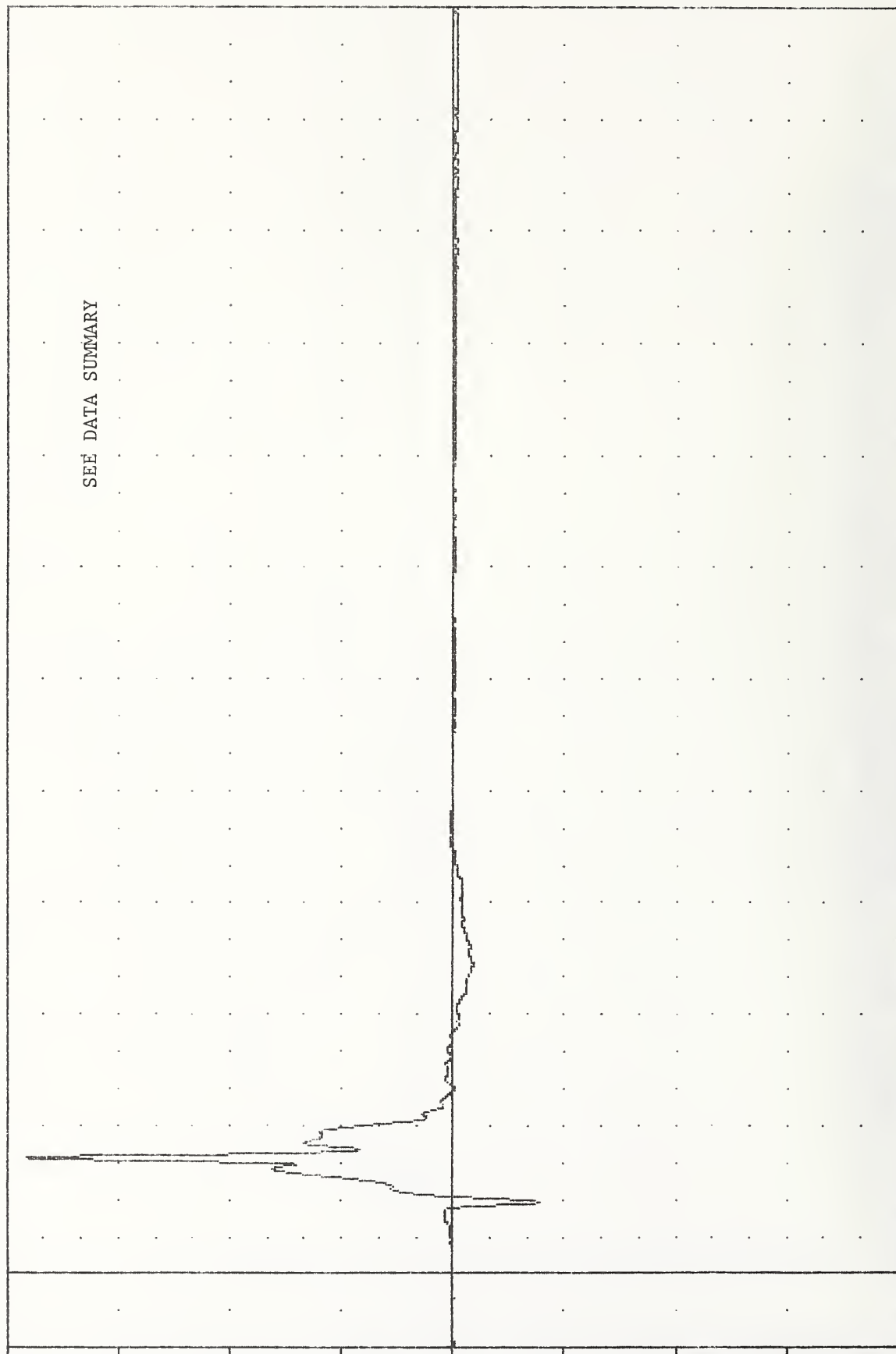
IHC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 84300000000
 PEVY63

PLU1 UH1E 2-NOV-84 08:45:40

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -39.290 19.25 , 190.98 * 31.13

ACCELERATION (G)



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (msec)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER PELVIS ACCELERATION Y AXIS

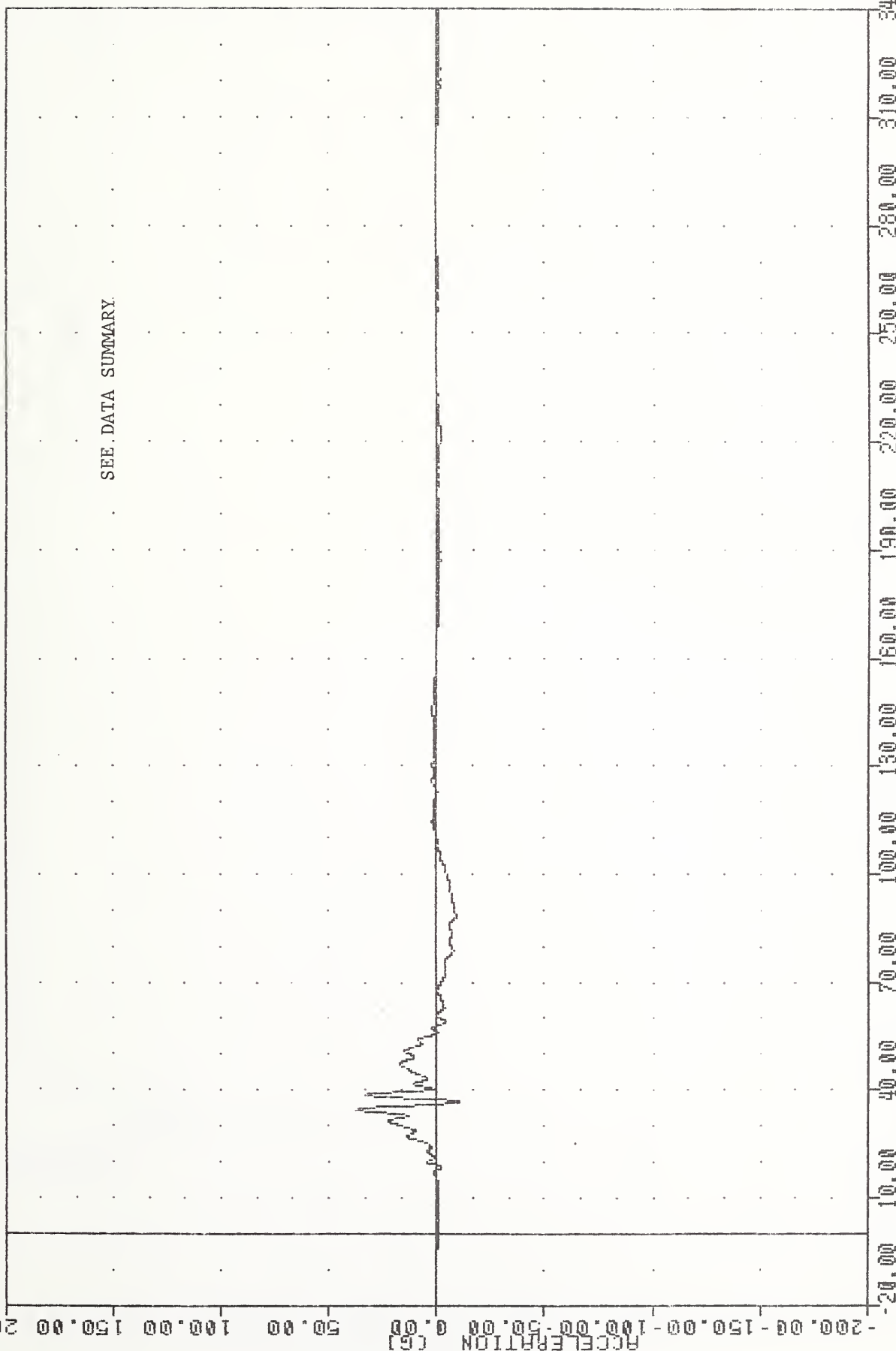
TRC , 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
PEVZ63

PLOT DATE 1-NOV-84 16:10:09

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -10.41e 36.63e 37.37e 34.38

SEE DATA SUMMARY



IRC , 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
PEVRG3

PLOT DATE 1-NOV-84 16:10:09

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 0.102 -8.36, 195.44 & 31.13

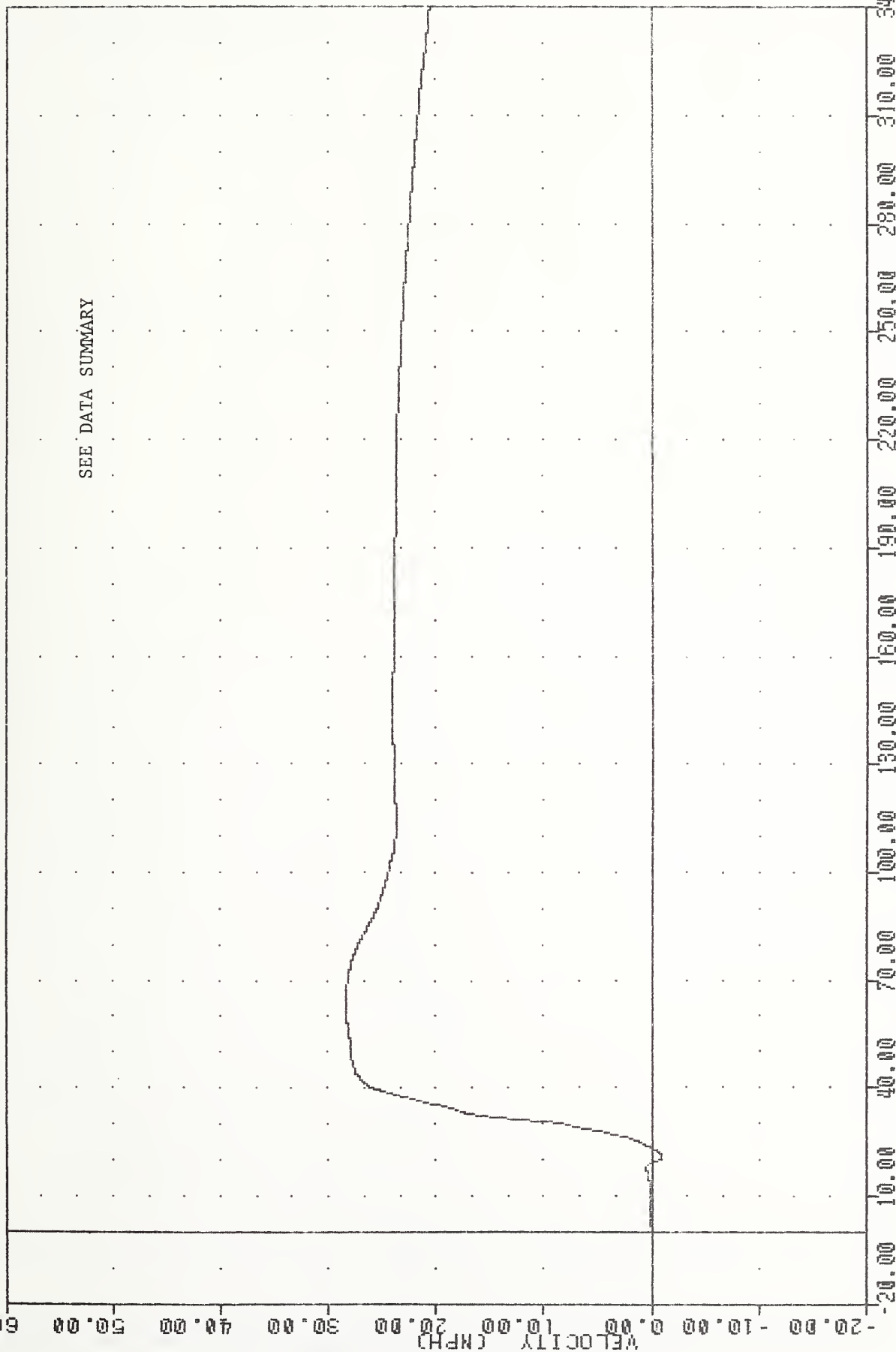
ACCELERATION (G)
-10.00
-4.00
0.00
4.00
8.00
12.00
16.00
19.00
23.00
27.00
31.00
35.00

SEE DATA SUMMARY

-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS RESULTANT

INC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 84300000000
 PEVYV3
 PLOT DATE 1-NOV-84 16:11:42
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -1.03E 20.75, 28.39 E 64.86



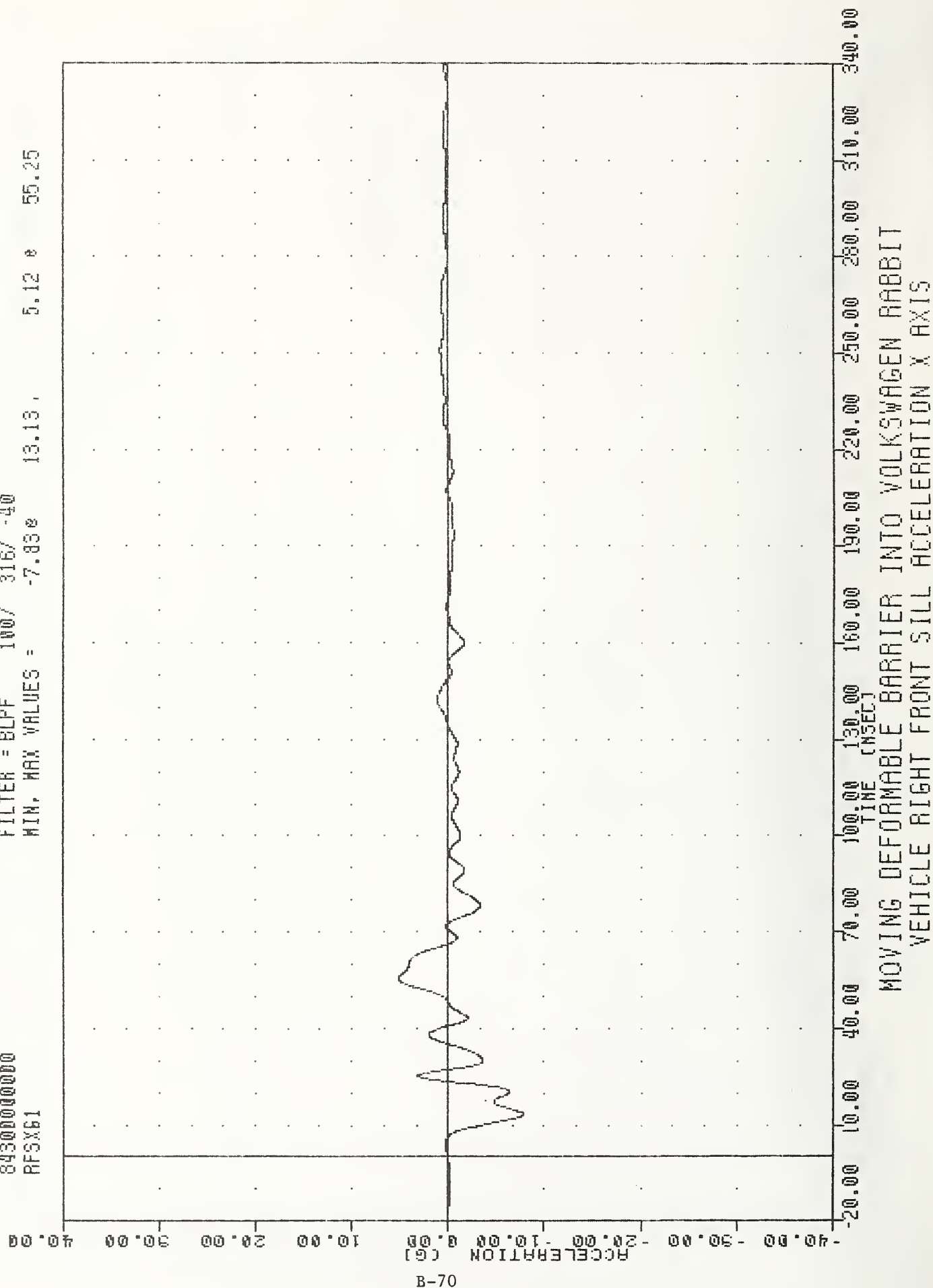
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING PEVY63

IHC 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 RFSXB1

PLU1 WHIE 1-NOV-84 16:10:09

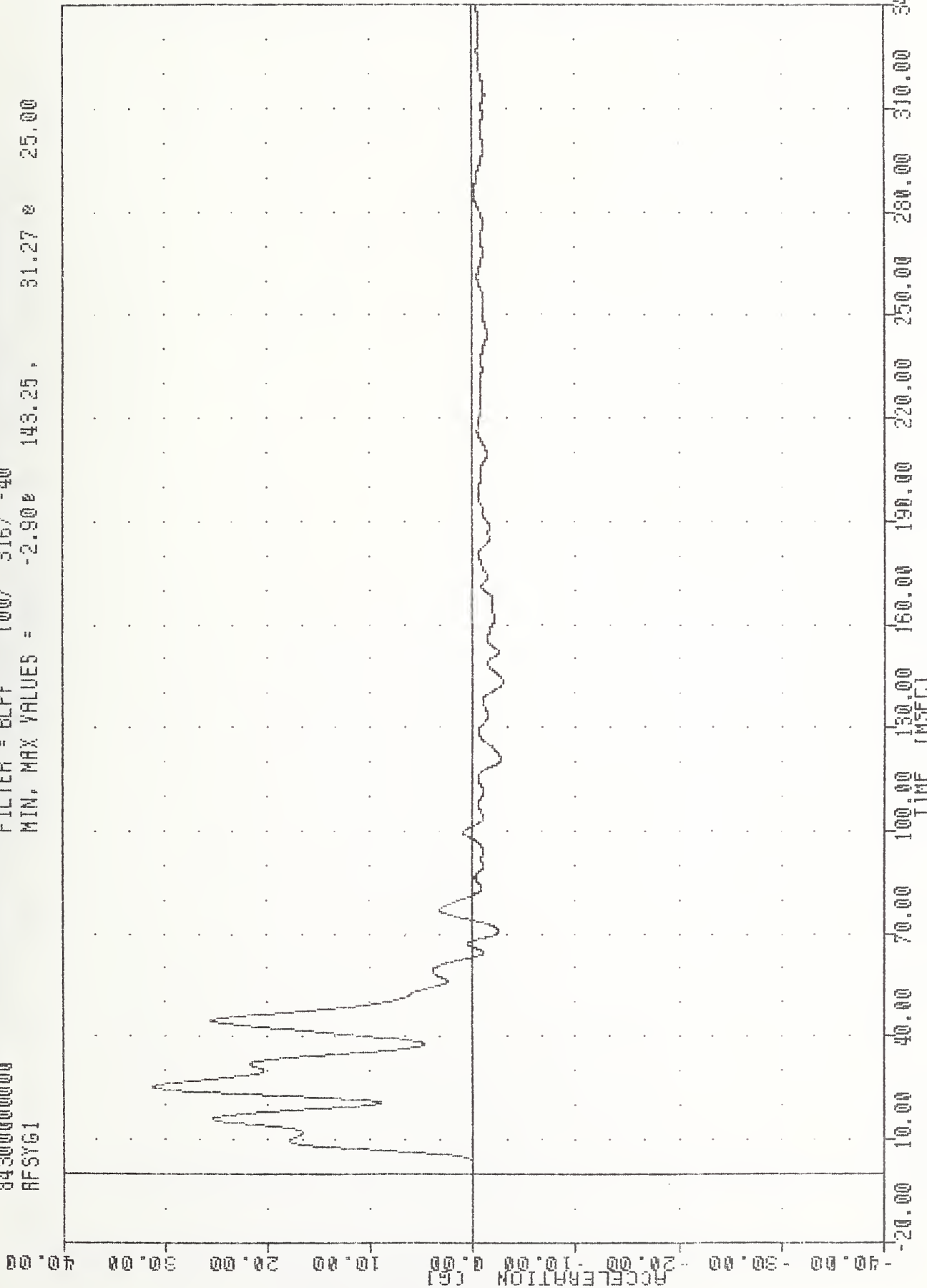
FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -7.83e 13.13, 5.12 e 55.25



IRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 RFSYG1

PLUT DATE 1-NOV-84 16:10:03
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -2.90e 143.25, 31.27 e 25.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT FRONT SILL ACCELERATION Y AXIS

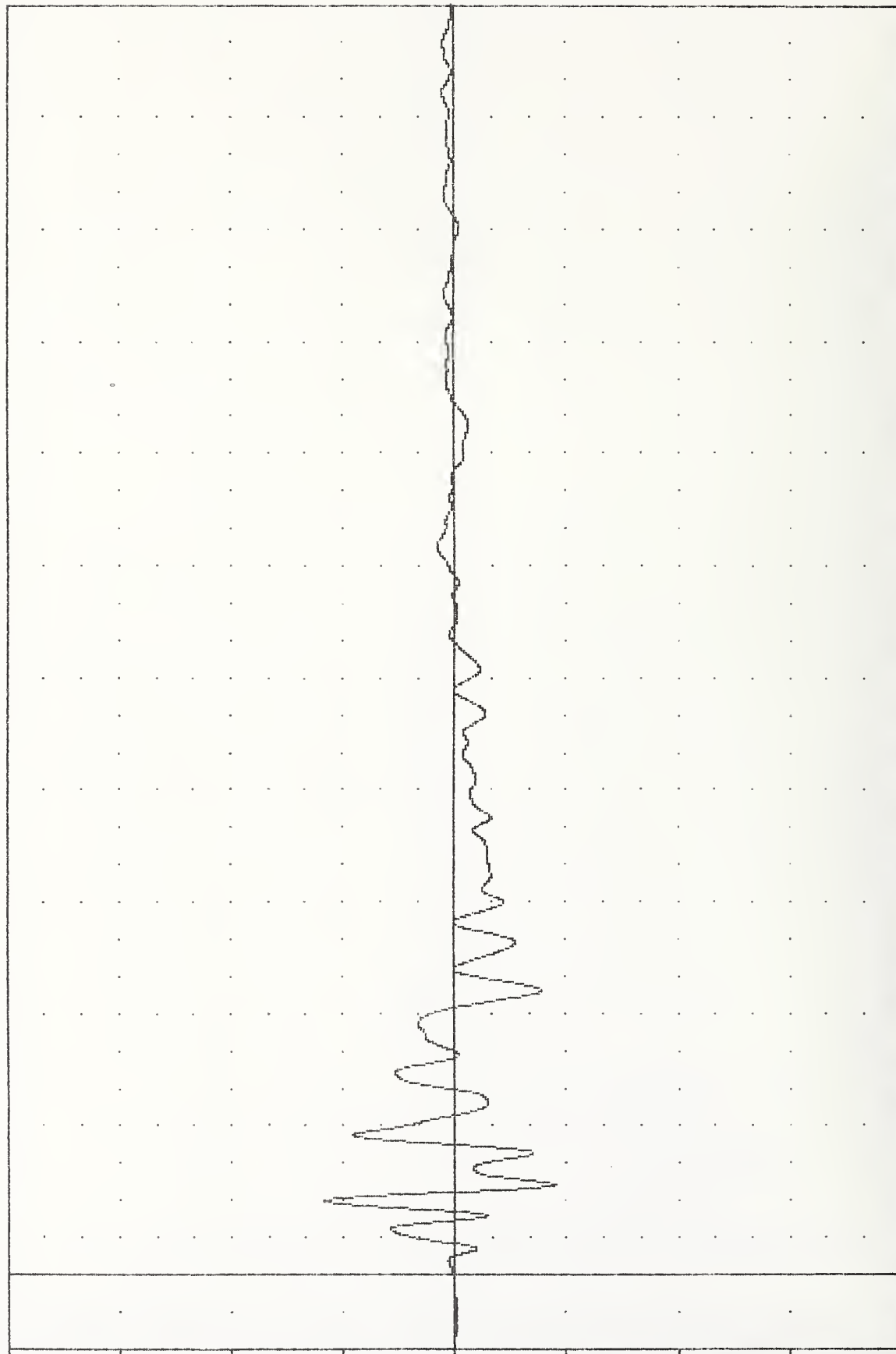
IKL , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 84300000000
 RFSZG1

PLU1 UHIE 1-NOV-84 16:10:09

FILTER = 8LPF 100/ 316/ -40

MIN, MAX VALUES = -9.018 24.13, 11.70 19.75

ACCELERATION (G)

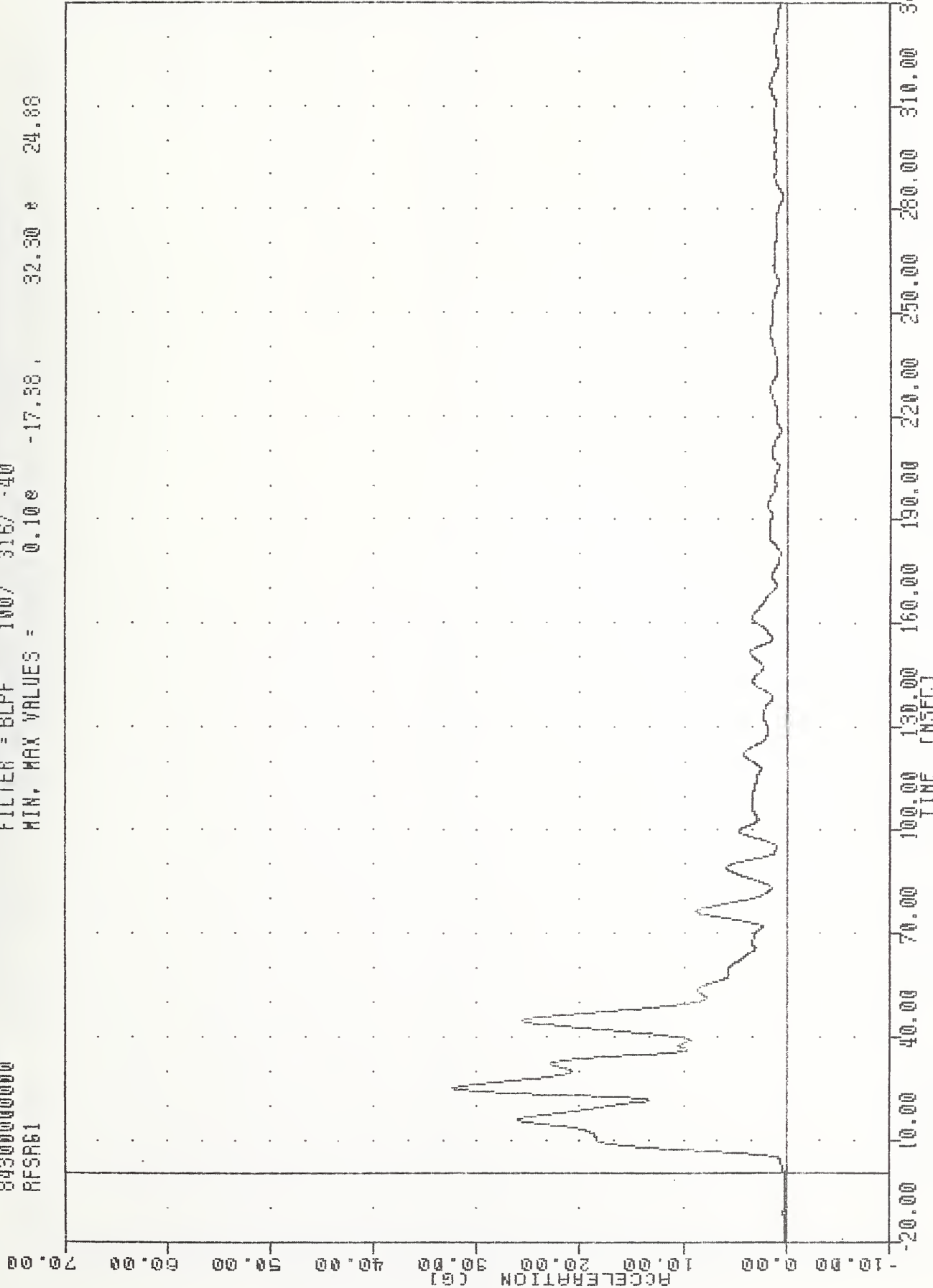


TIME (msec)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT FRONT SILL ACCELERATION Z AXIS

INC 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 RFSR61

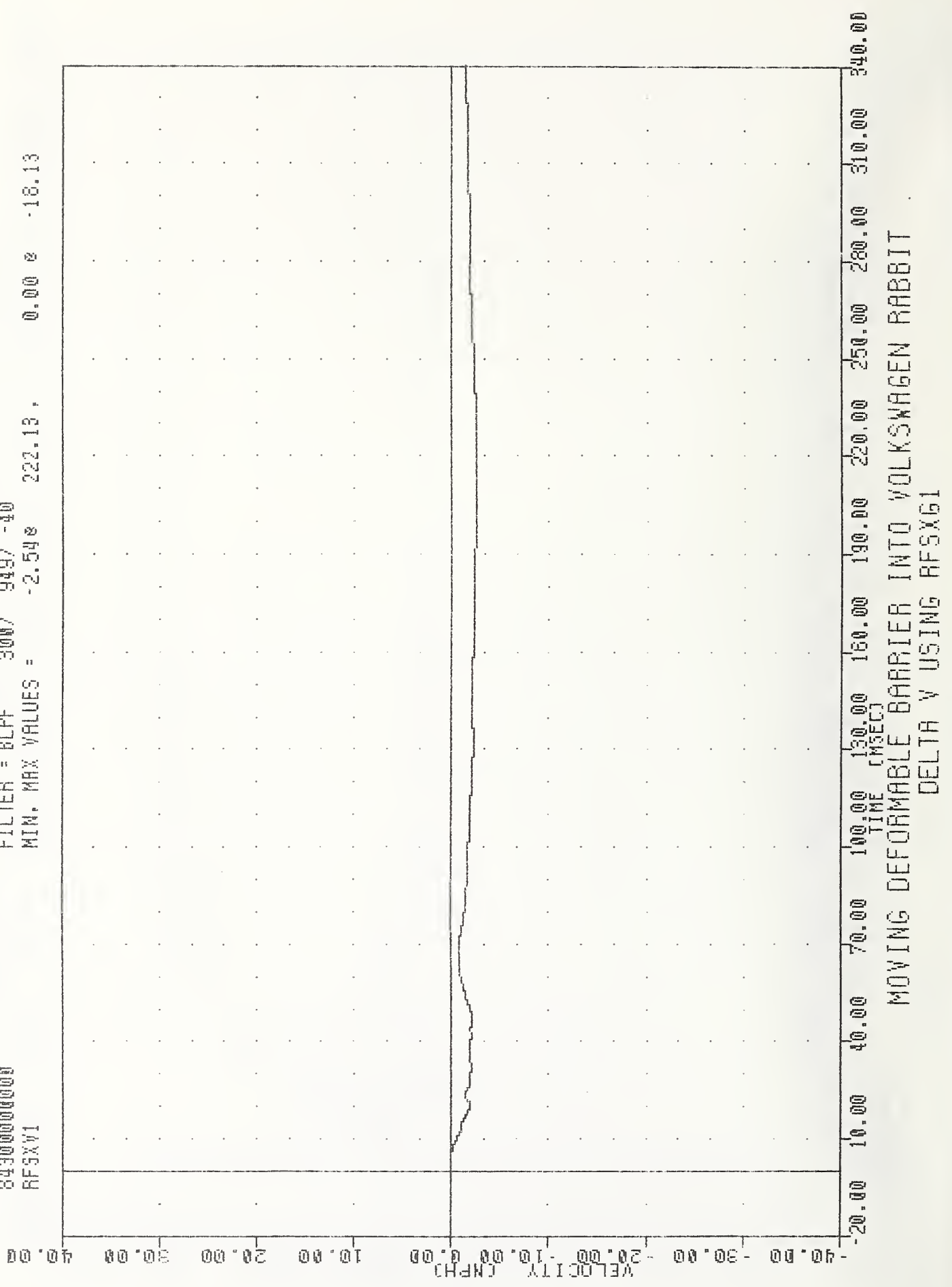
PLUT DATE 1-NOV-84 16:10:09
 FILTER = 6LPP 100/ 316/ -40
 MIN. MAX VALUES = 0.10e -17.38 32.30 24.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT FRONT SILL RESULTANT

INL 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 RFSXV1

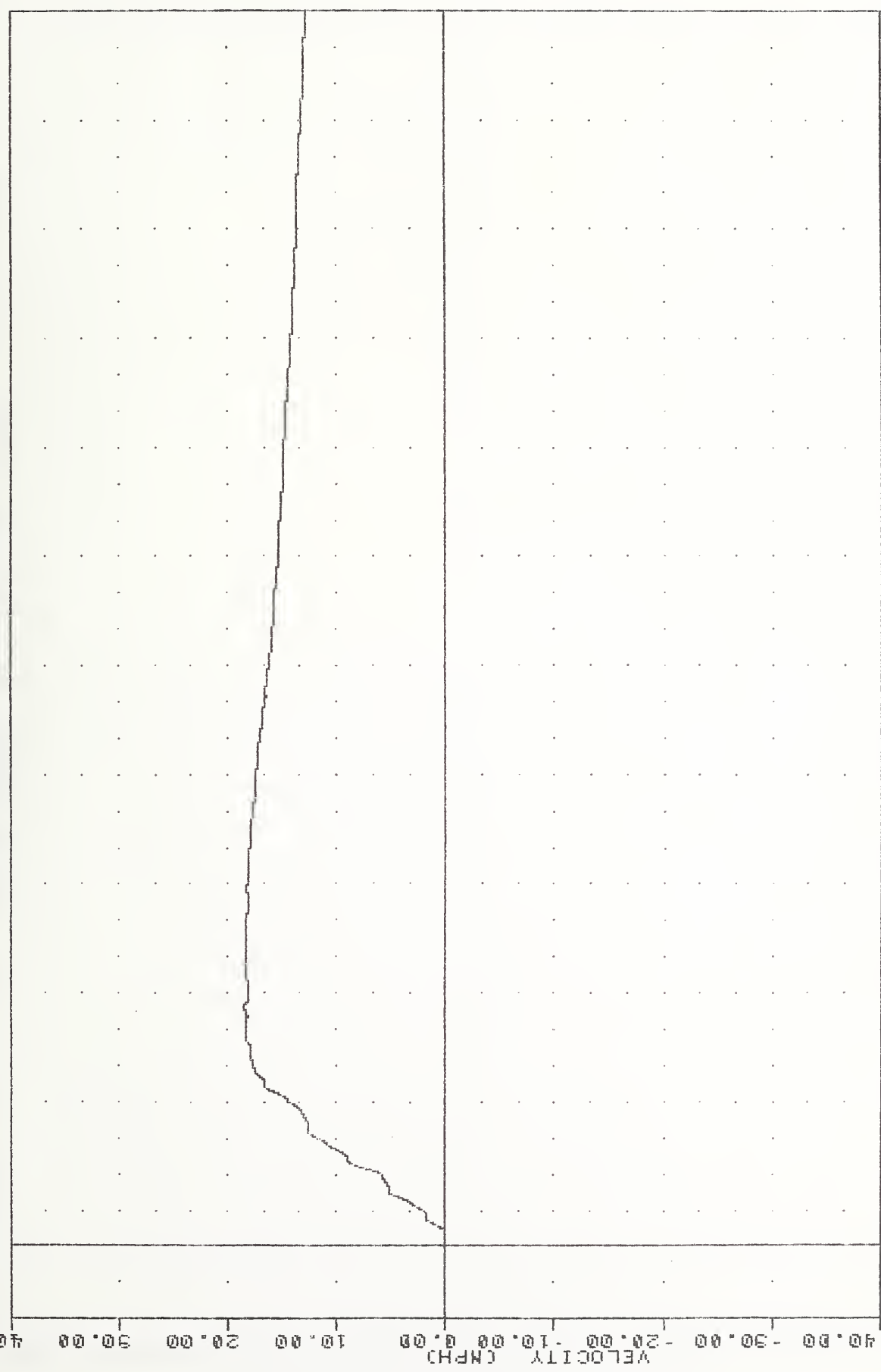
FLU1 UNIT 1-NOV-84 16:11:42
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -2.548 222.13, 0.00 0 -18.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RFSXG1

INL 841025
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 RFSYV1

PLU1 UH1E 1-NOV-84 16:11:42
 FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = 0.000 -20.00, 18.49 0 65.88



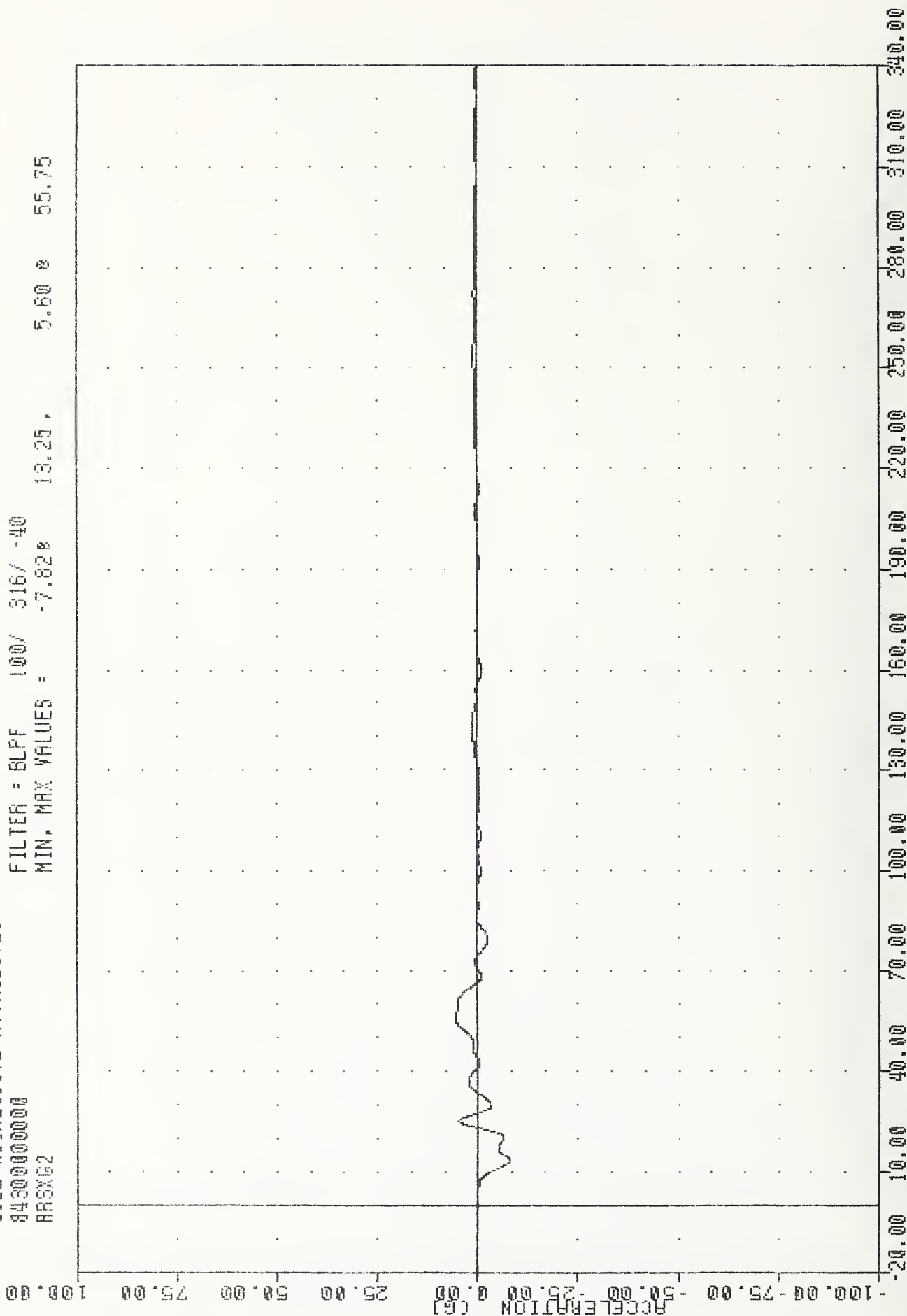
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA W USING RFSYGI

IRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 ARSXG2

PLOT DATE 1-NOV-84 16:10:09

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -7.82 13.25 5.60 55.75

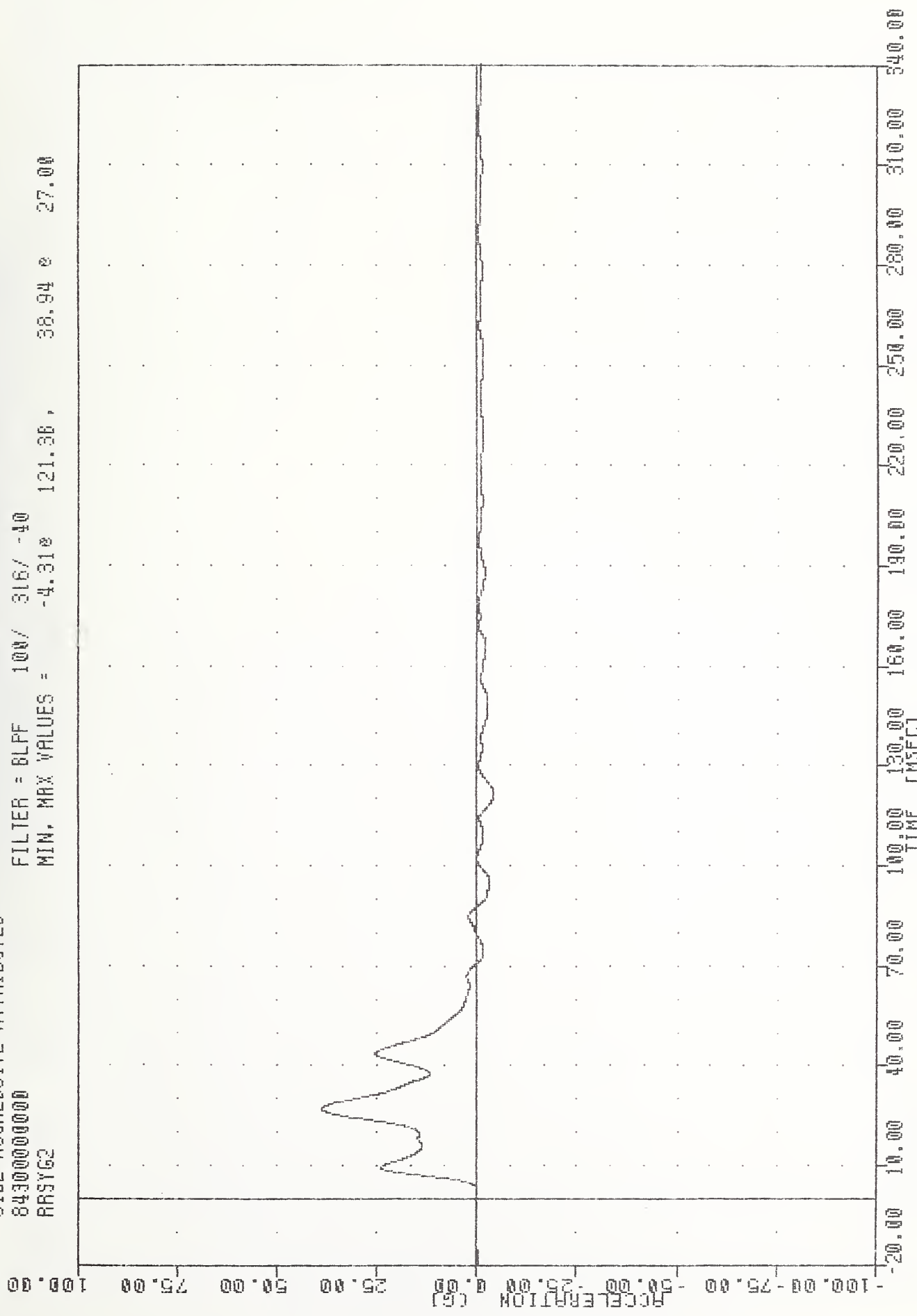


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT REAR SILL ACCELERATION X AXIS

IHC . 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
RRSYG2

PLU1 DATE 1-NOV-84 16:10:09

FILTER = 6LFF 100/ 316/ -40
MIN. MAX VALUES = -4.31e 121.36, 38.94 e 27.00



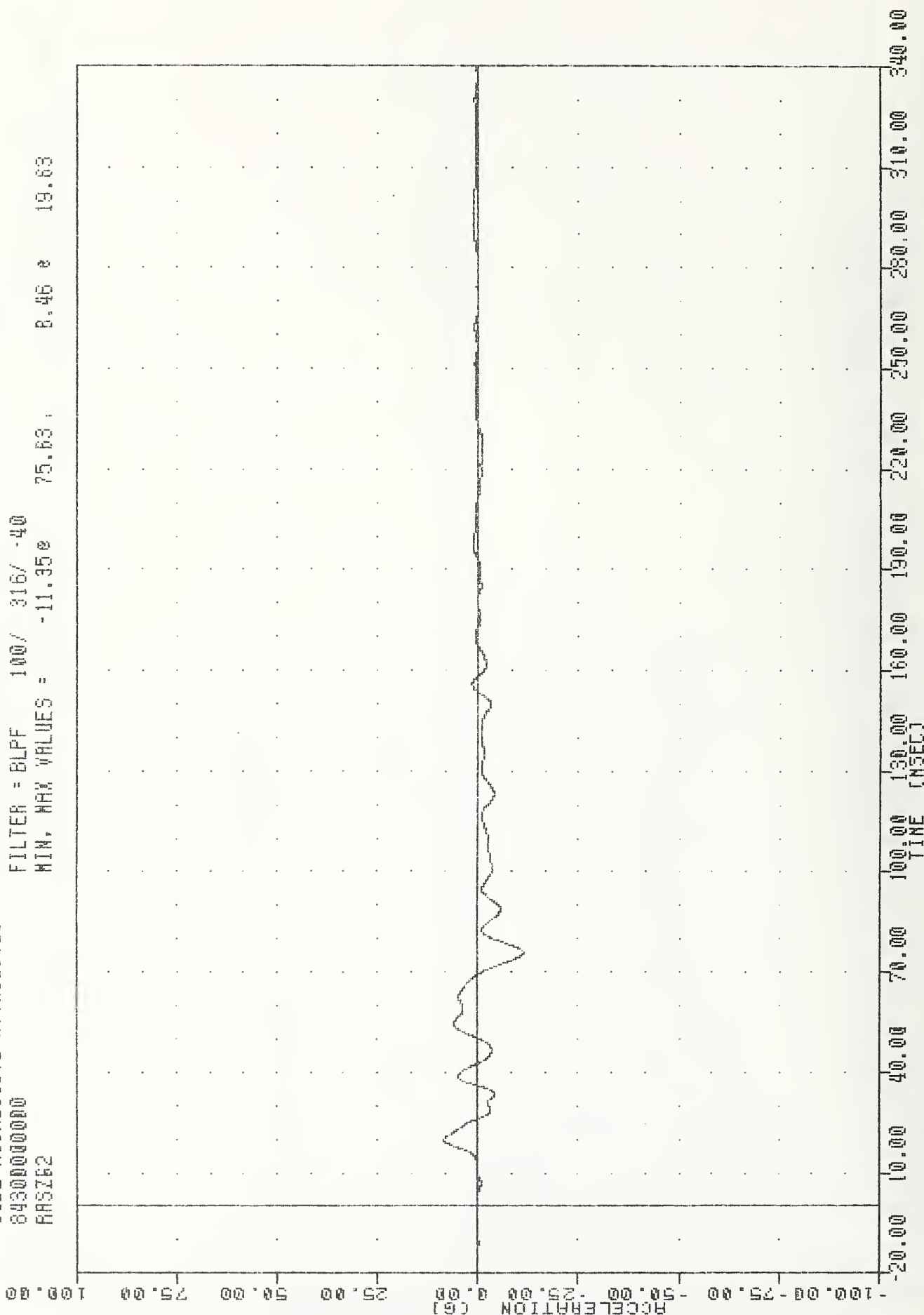
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT REAR SILL ACCELERATION Y AXIS

INC 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 RRSZ62

PLUT DATE 1-NOV-84 15:10:09

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -11.350 75.63 8.46 19.63



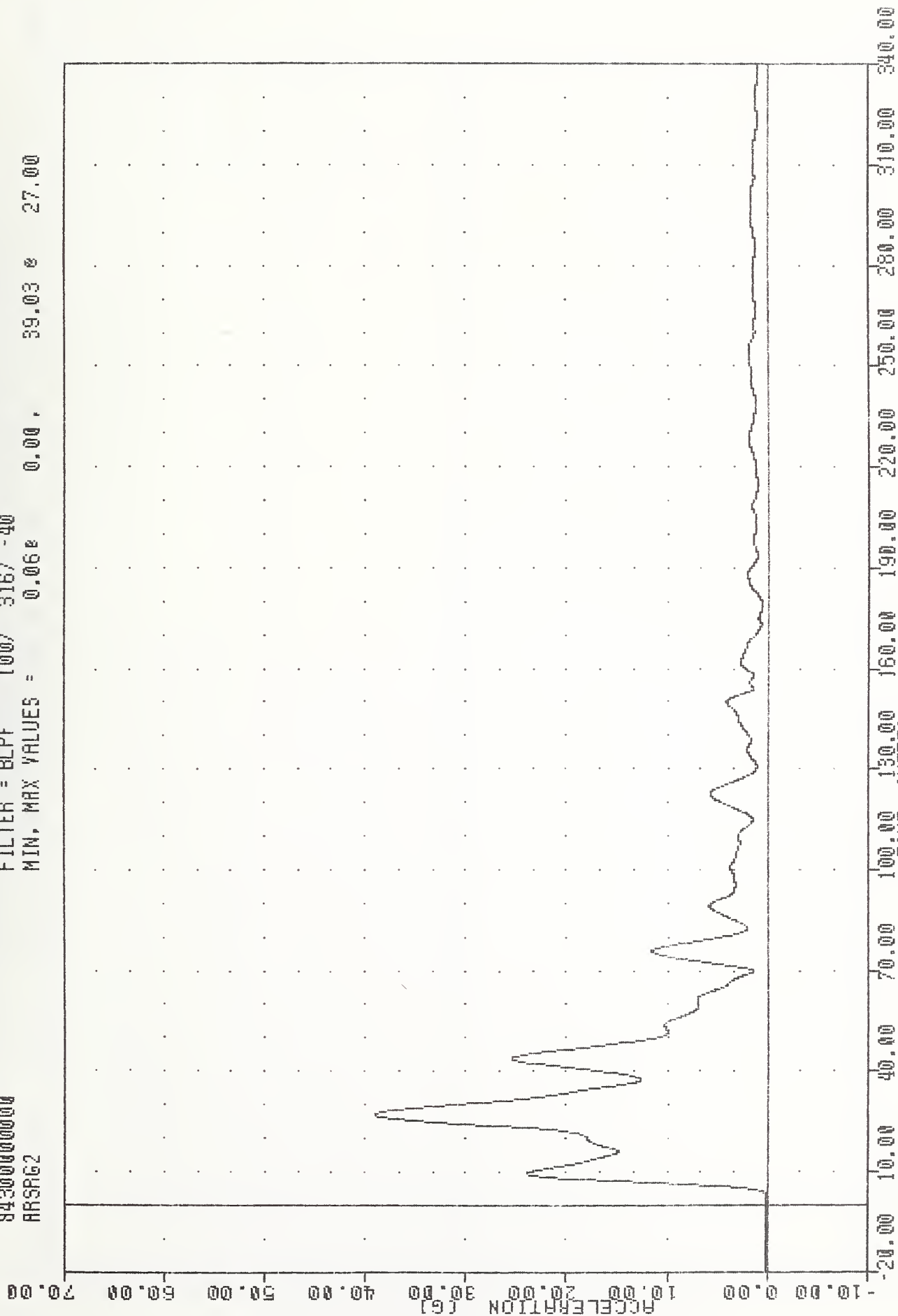
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT REAR SILL ACCELERATION Z AXIS

IRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 ARSRG2

PLOT DATE 1-NOV-84 16:10:09

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = 0.00, 39.03 @ 27.00



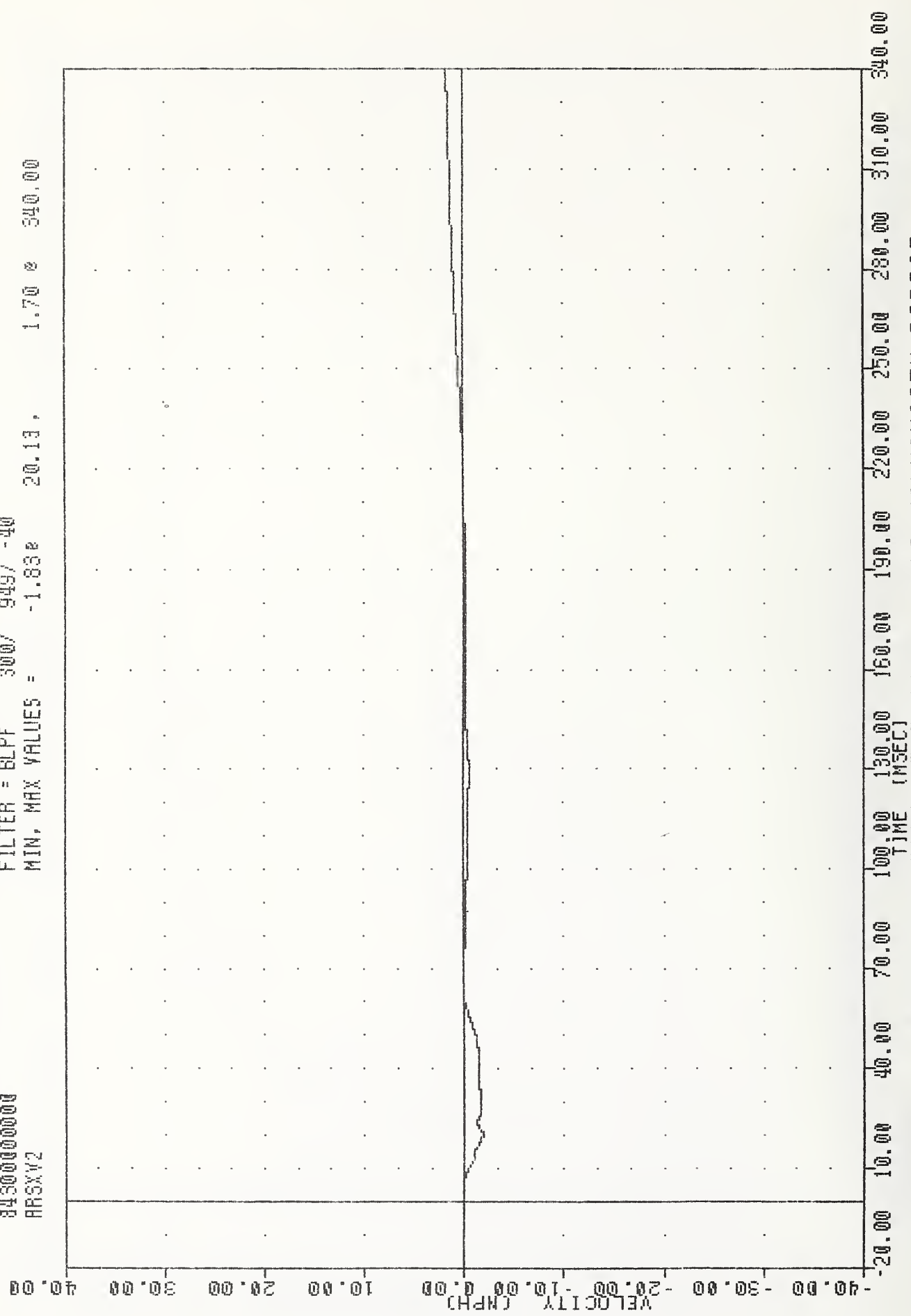
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT REAR SILL RESULTANT

TRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 ARSXY2

PLOT DATE 1-NOV-84 16:11:42

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -1.83e 20.13, 1.70 e 340.00



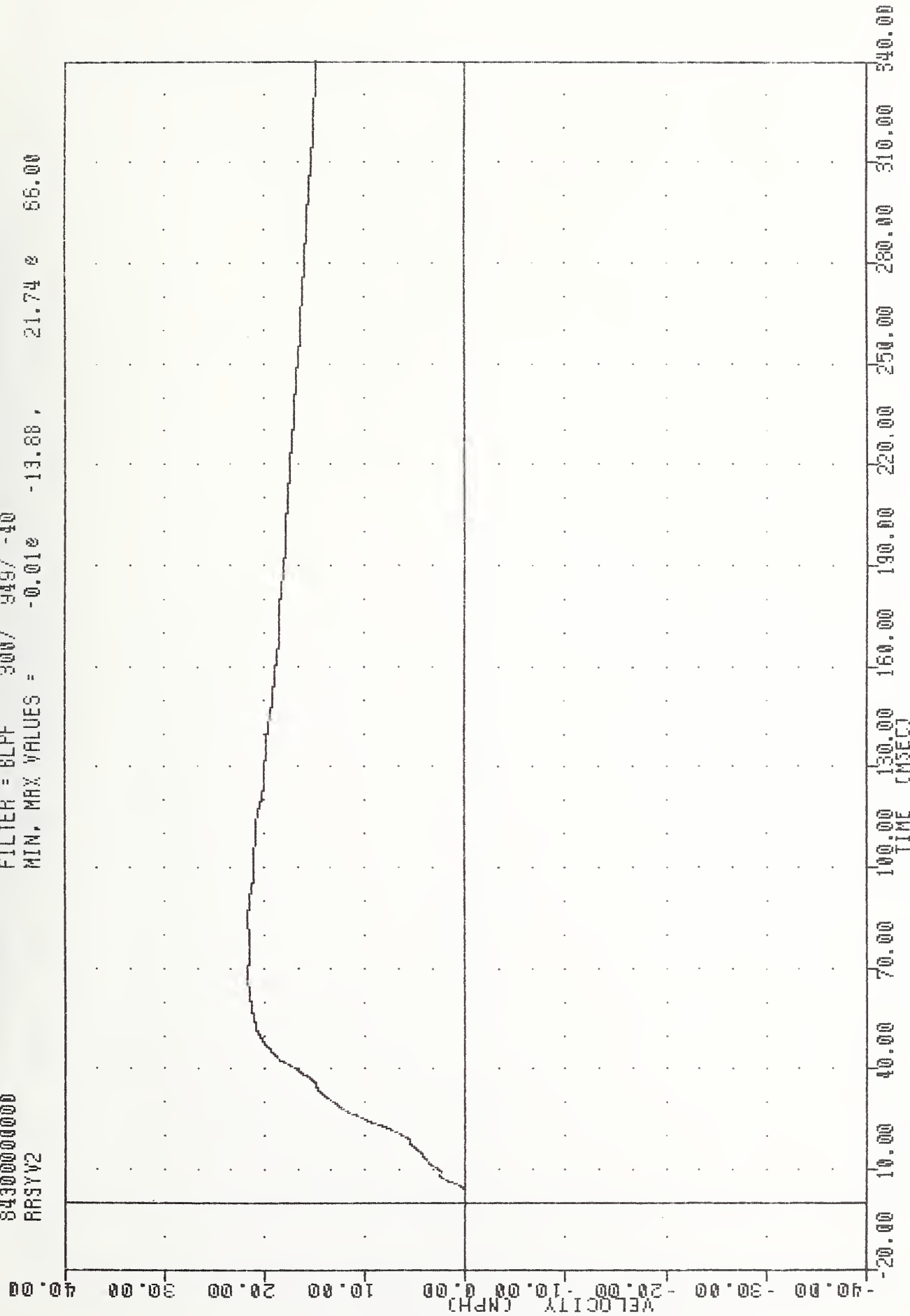
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING ARSXG2

IRC , 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
RRSYV2

PLU1 UNIT 1-MOV-84 16:11:42

FILTER = 8LPF 300/ 949/ -40

MIN. MAX VALUES = -0.018 -13.88, 21.74 8 86.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING RRSYG2

TRC , 841026

PRINT DATE

1-NOV-84

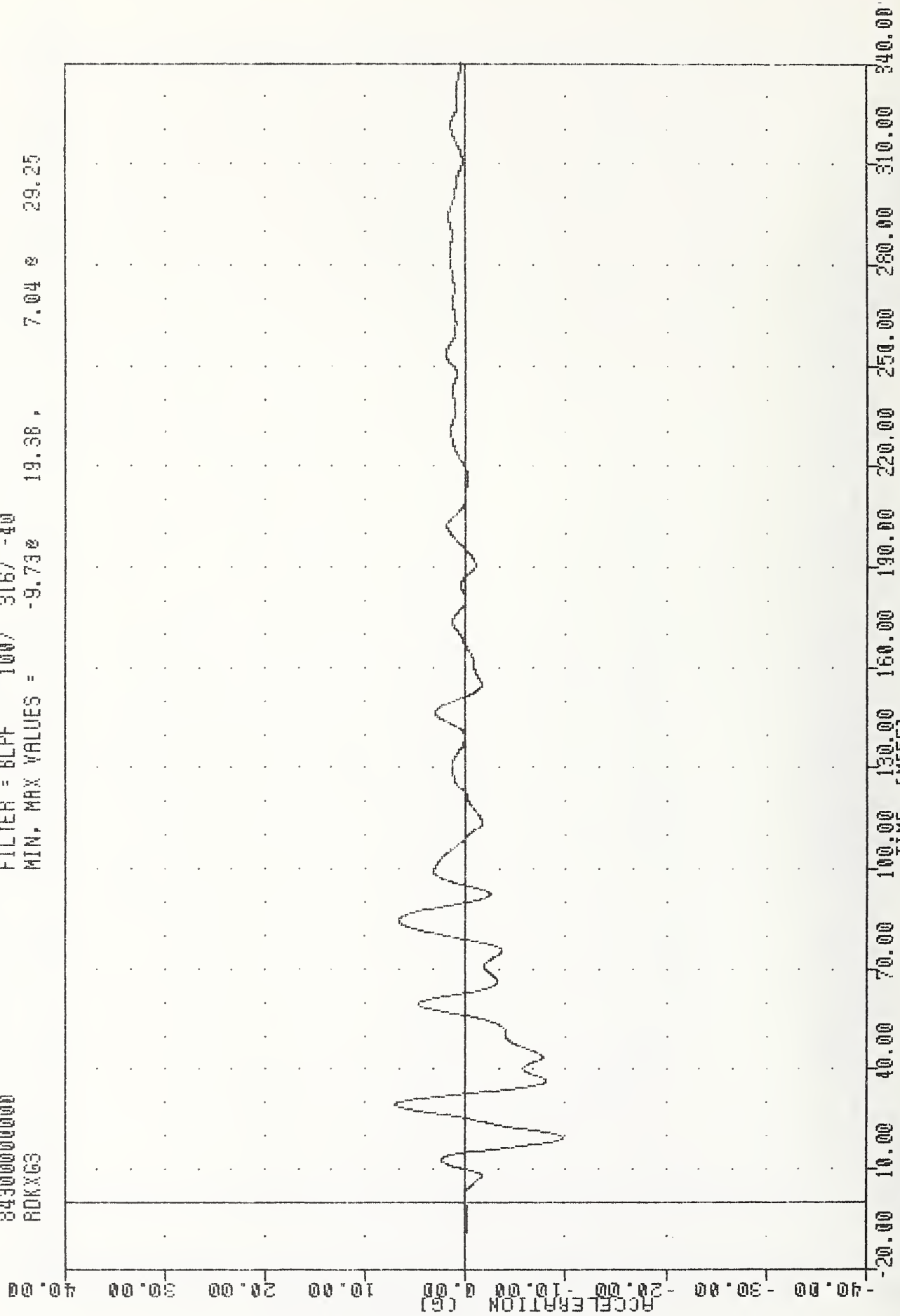
11:11:00

TRC , 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
RDKXG3

PLUT UNIT 1-NOV-84 16:10:08

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -9.738 19.38 7.04 29.25



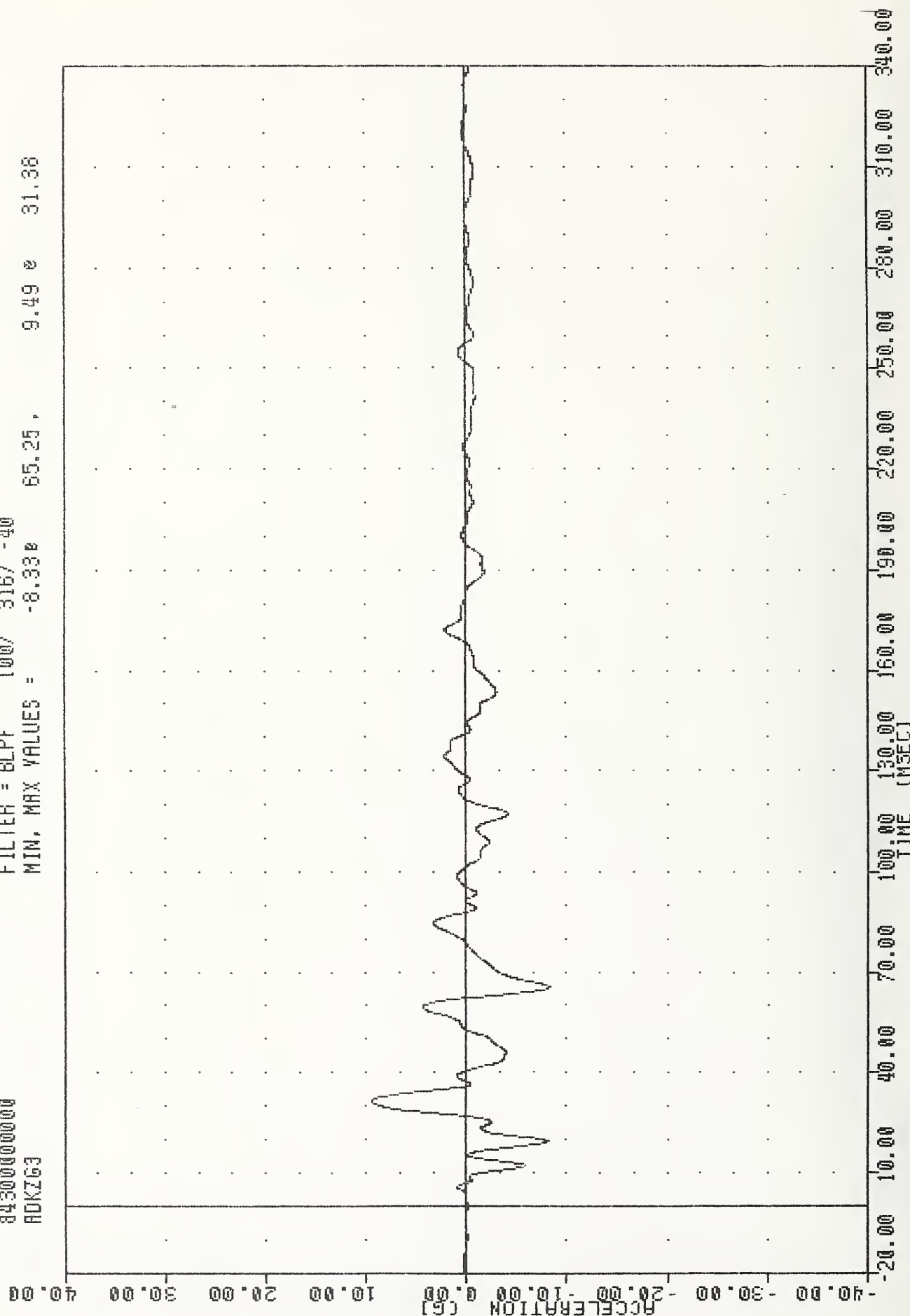
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK ACCELERATION X AXIS

TRC , 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
ADKZ63

PLOT DATE 1-NOV-84 16:10:09

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -8.33E 65.25, 9.49 E 31.38



B-84

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK ACCELERATION Z AXIS

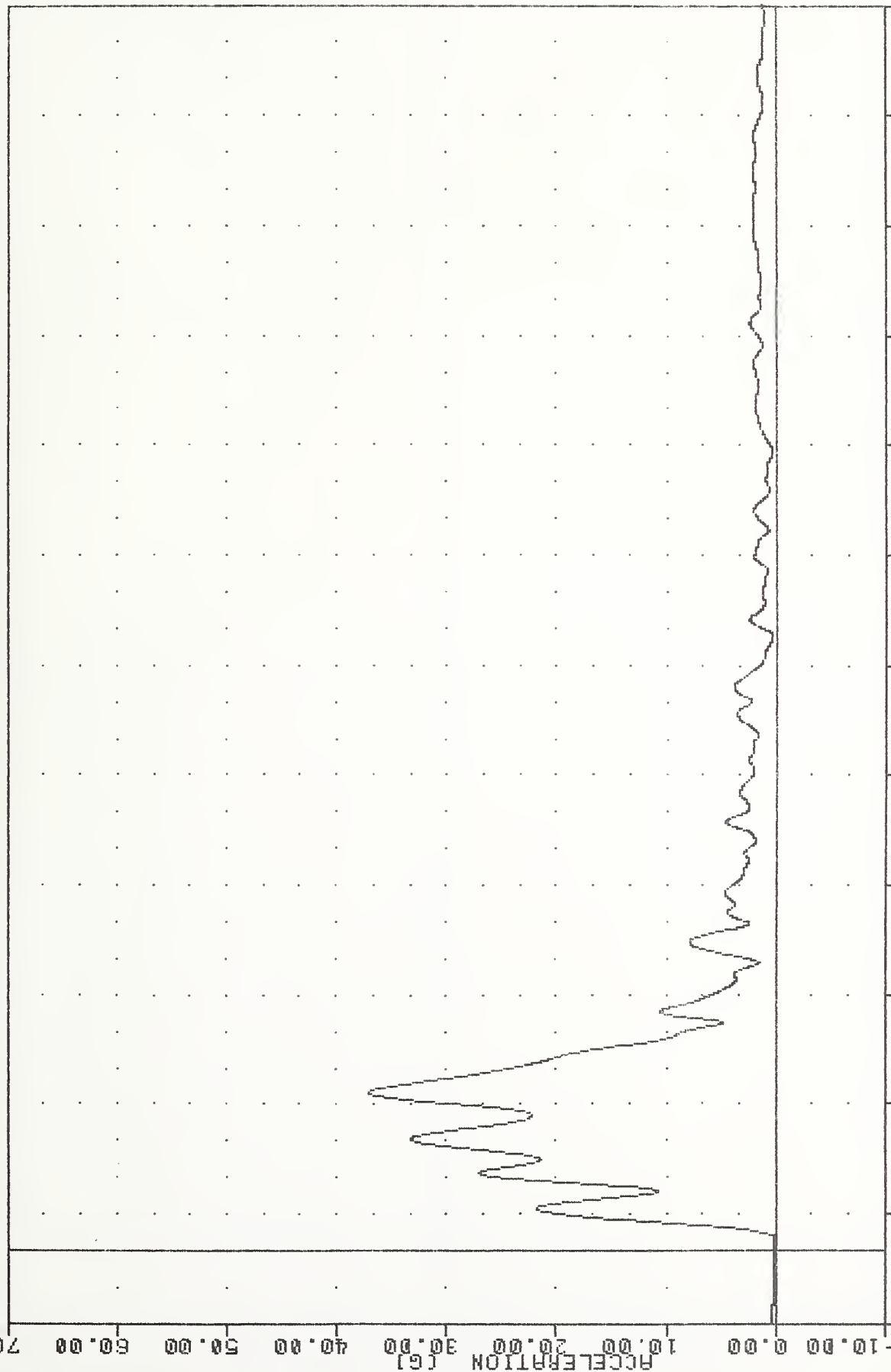
IRC , 841026 PLOT DATE 1-NOV-84 16:10:09

SIDE AGGRESSIVE ATTRIBUTES

843000000000 FILTER = 8LFF 100/ 315/ -40

RDKRG3 MIN, MAX VALUES = 0.05% -10.88, 37.09 @ 43.13

70.00



B-85

-20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

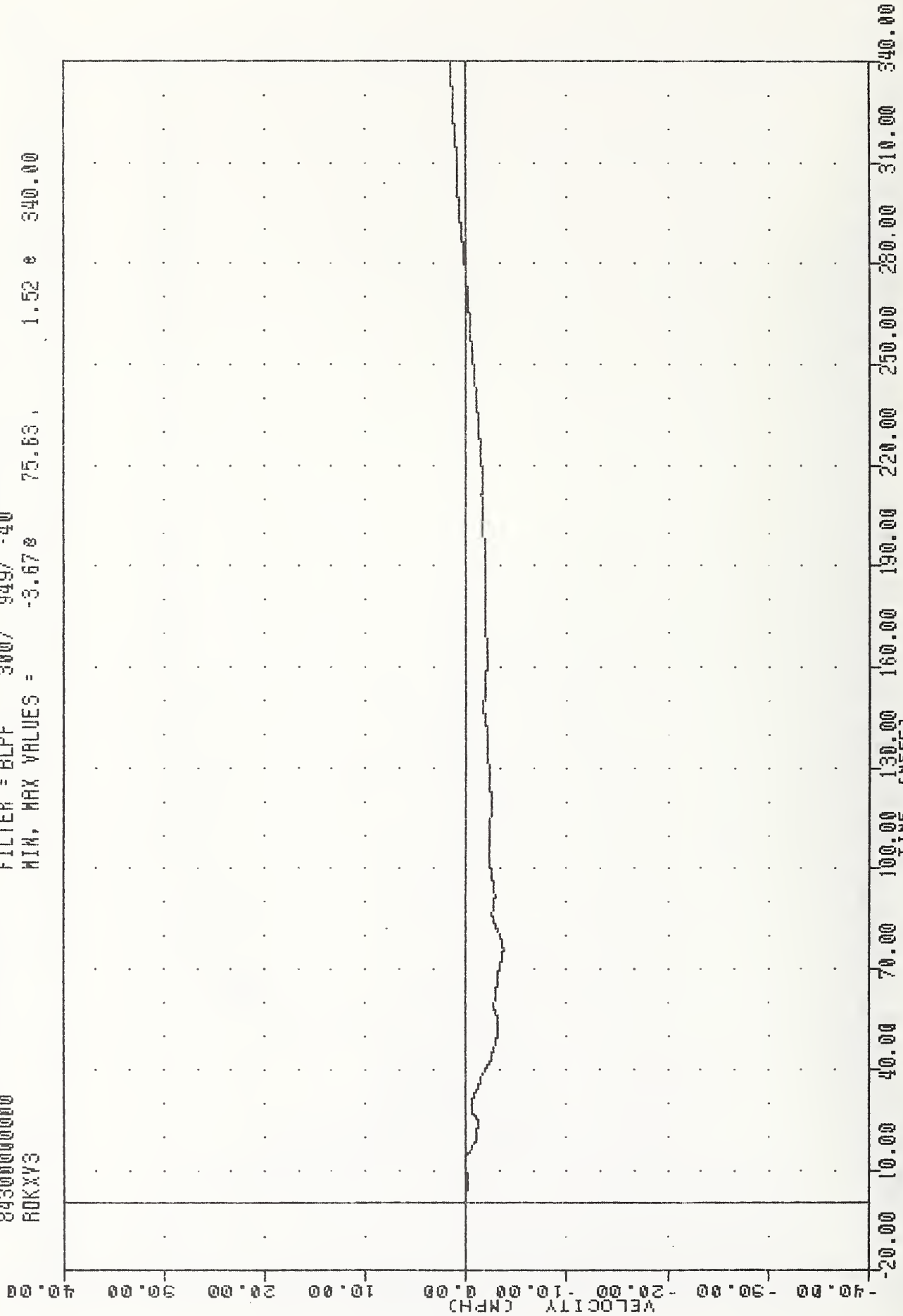
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK RESULTANT

TAC 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 ROKXV3

PLU1 UHIE 1-NOV-84 16:11:42

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -3.678 75.63, 1.52 e 340.00



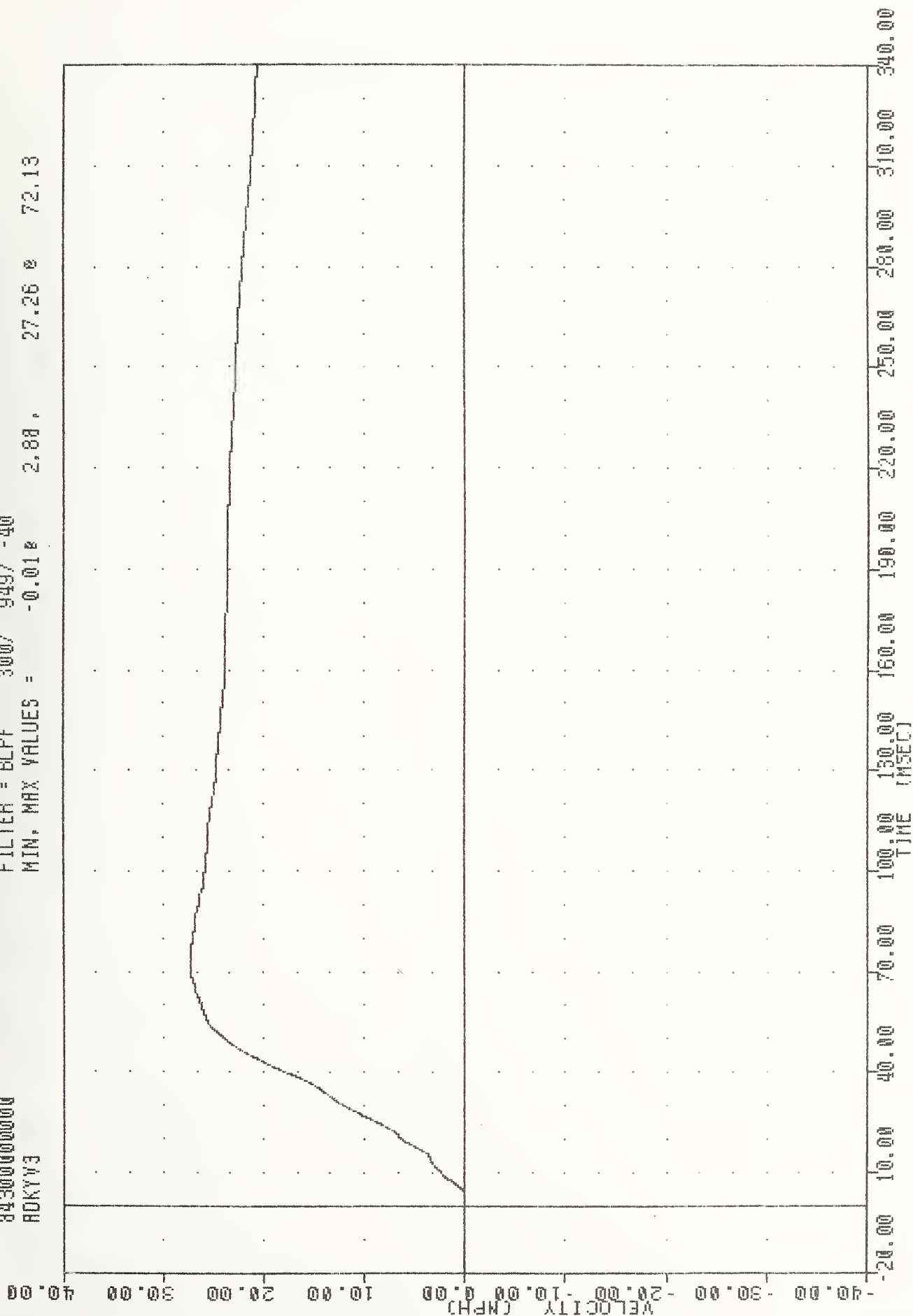
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING ROKXG3

TRC , 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
RDKYV3

PLUT DATE 1-NDV-84 15:11:42

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -0.01e 2.88 , 27.26 e 72.13

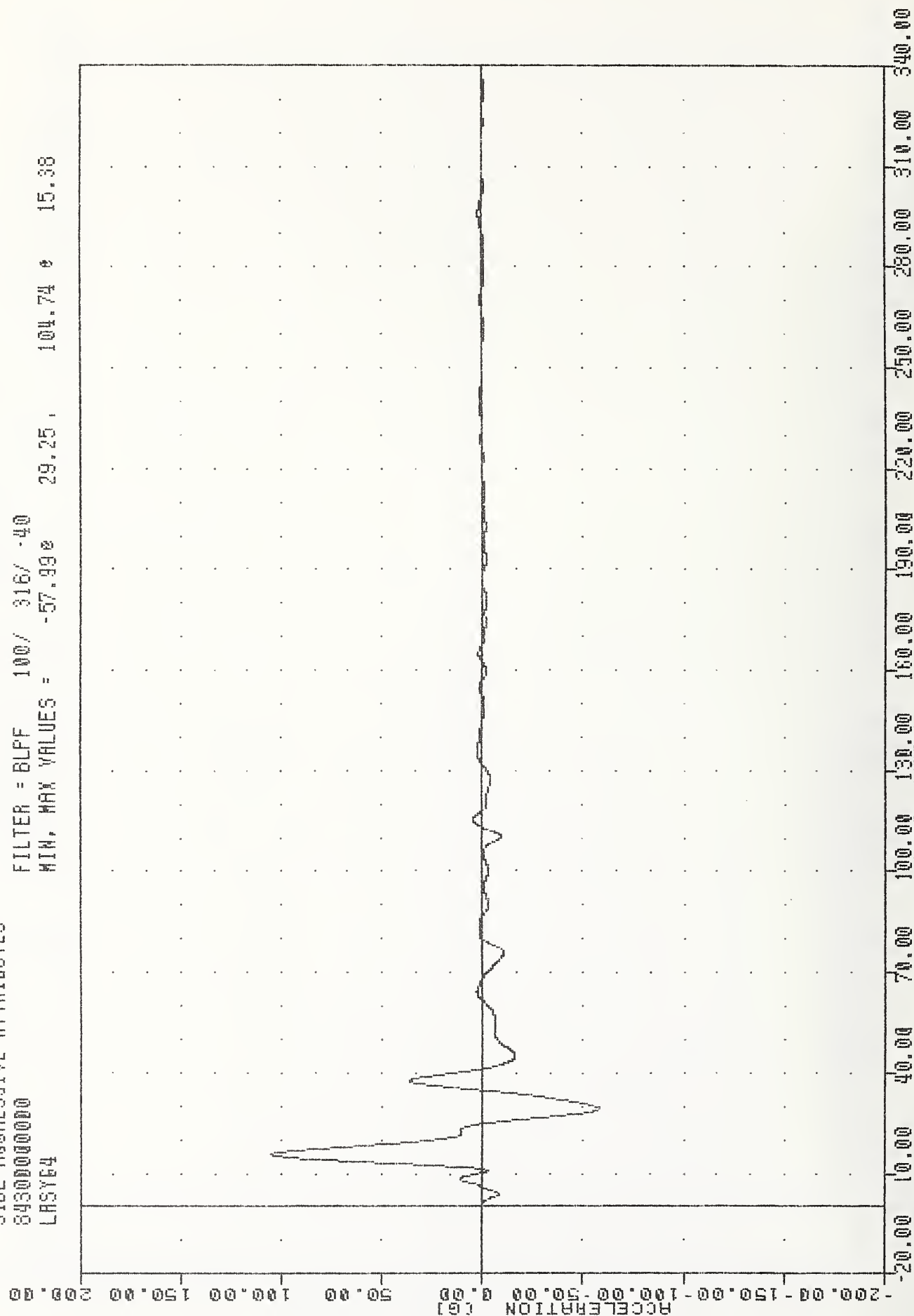


INC 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LASY64

PLU1 DR1E 1-NOV-84 16:10:09

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -57.99 29.25, 104.74 15.38



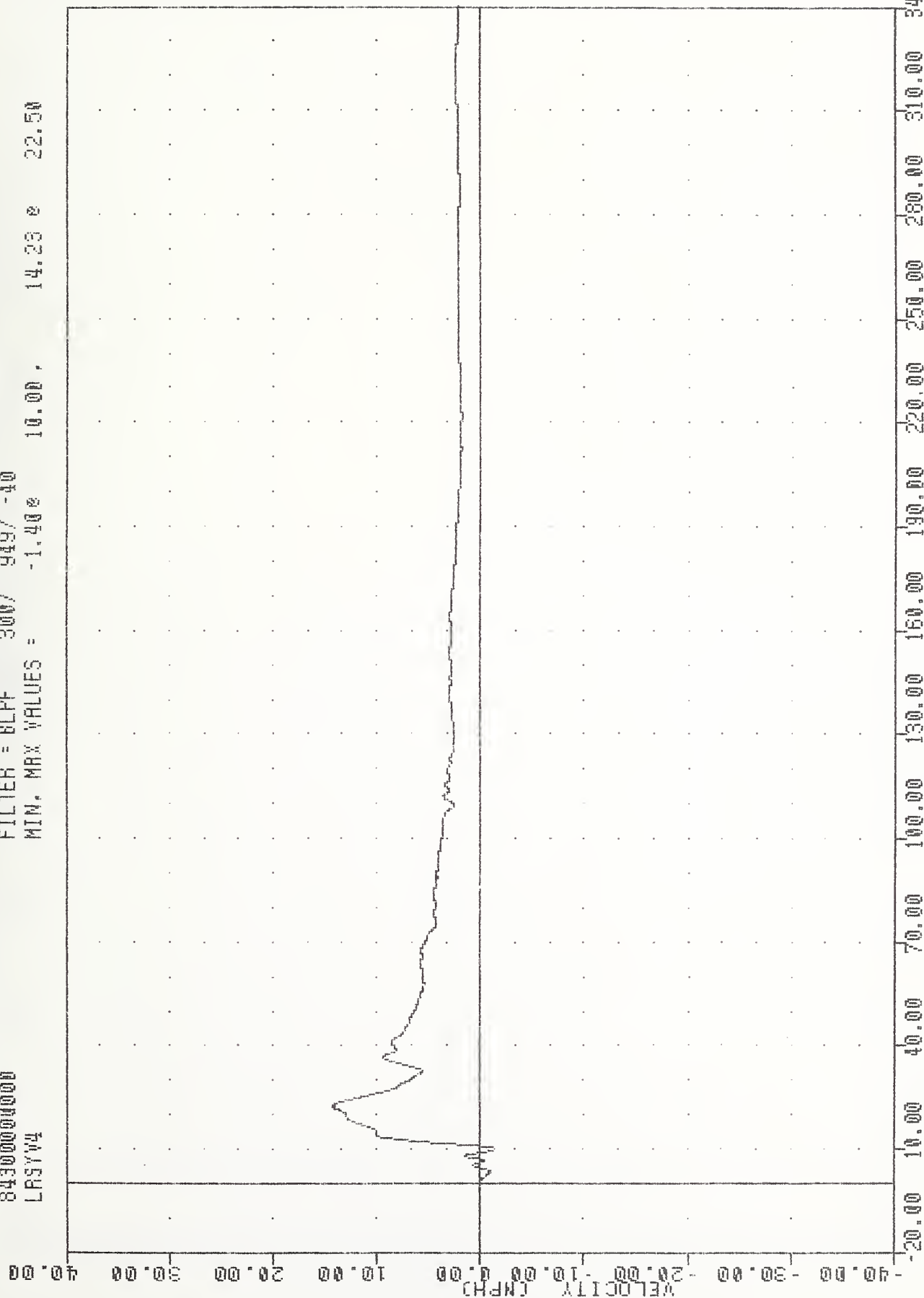
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT REAR SILL ACCELERATION Y AXIS

THL , 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
LRSYV4

PLOT DATE 1-NOV-84 16:11:42

FILTER = 8LFF 300/ 949/ -40

MIN. MAX VALUES = -1.40e 10.00 , 14.23 e 22.50



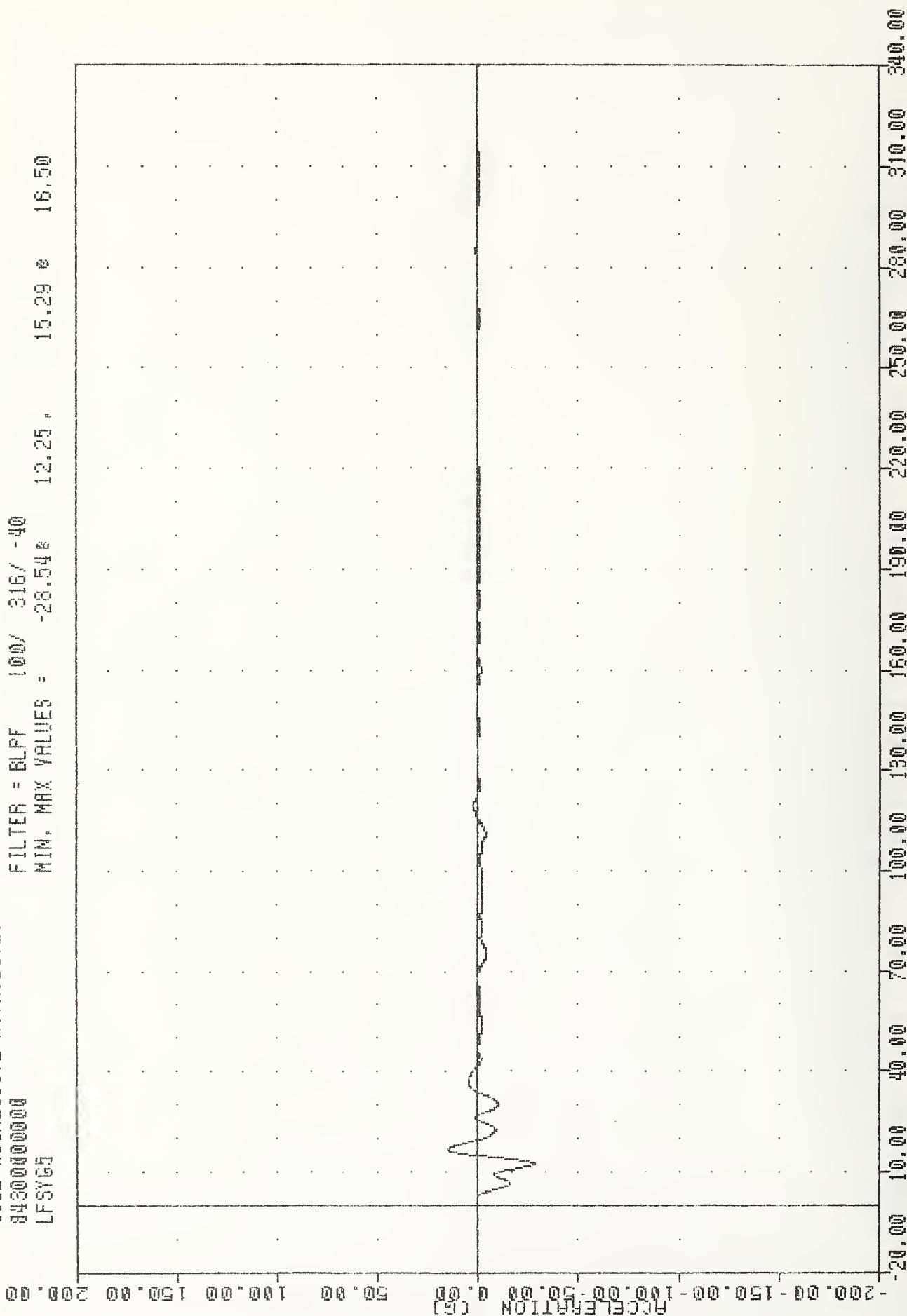
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LRSY64

TRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LFSYCS

PLOT DATE 1-NOV-84 16:10:09

FILTER = BLPF 100/ 316/ -40

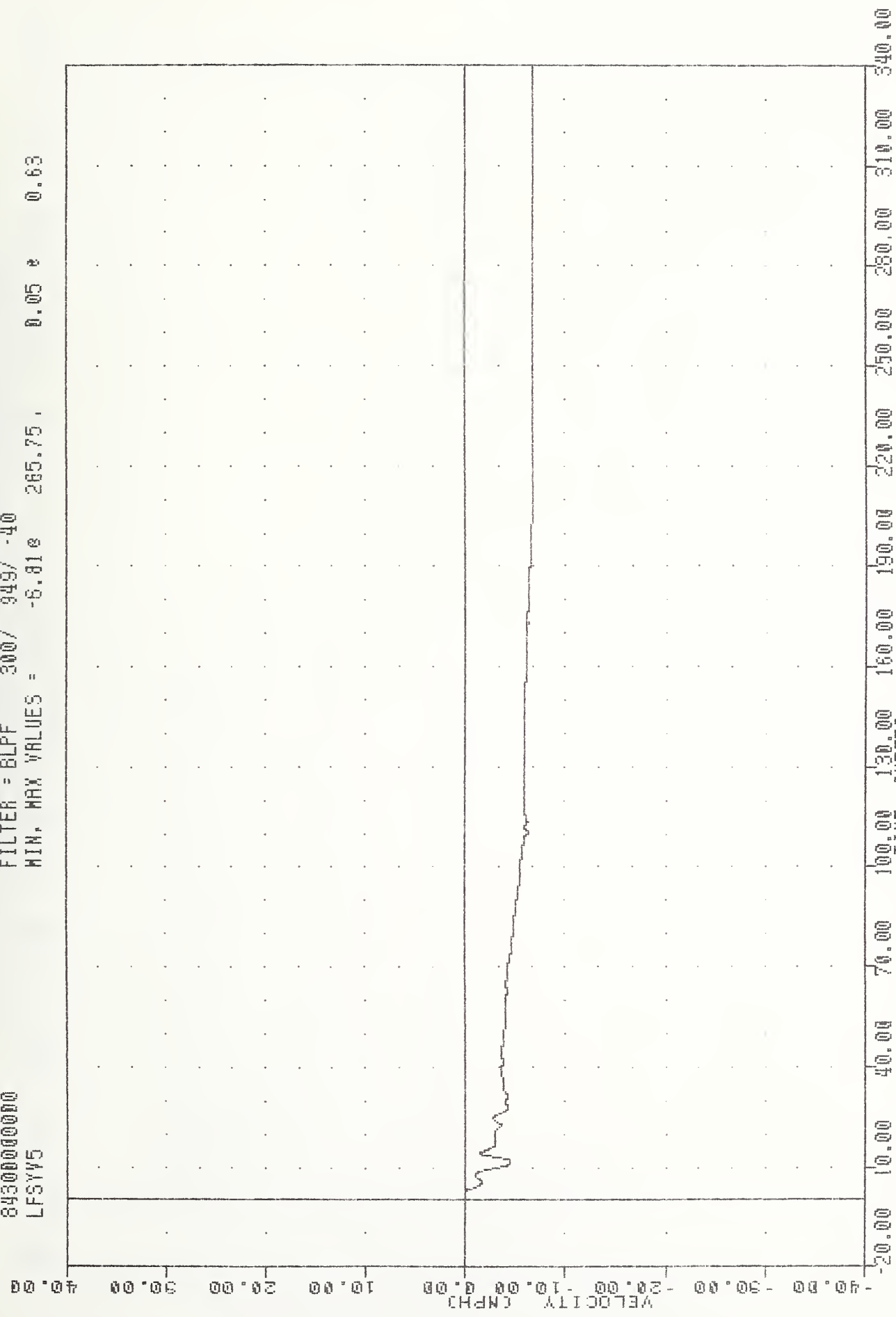
MIN. MAX VALUES = -28.548 12.25 15.29 16.50



TAC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LFSYV5

PLU1 UH1E 1-NOV-84 15:11:42

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -6.818 285.75 0.05 0.63



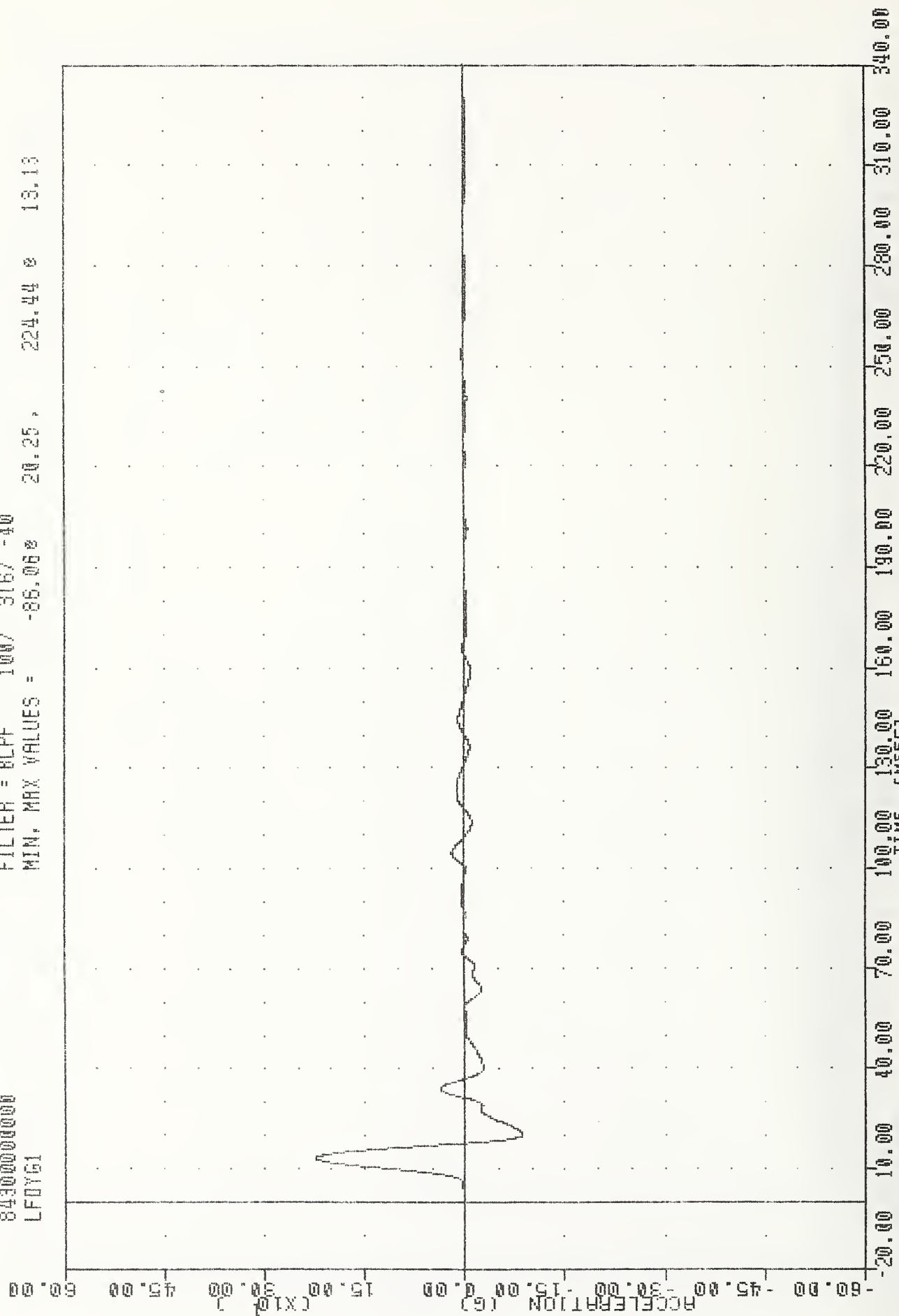
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LFSYG5

TRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LFOYGI

PLOT DATE 1-NOV-84 16:10:09

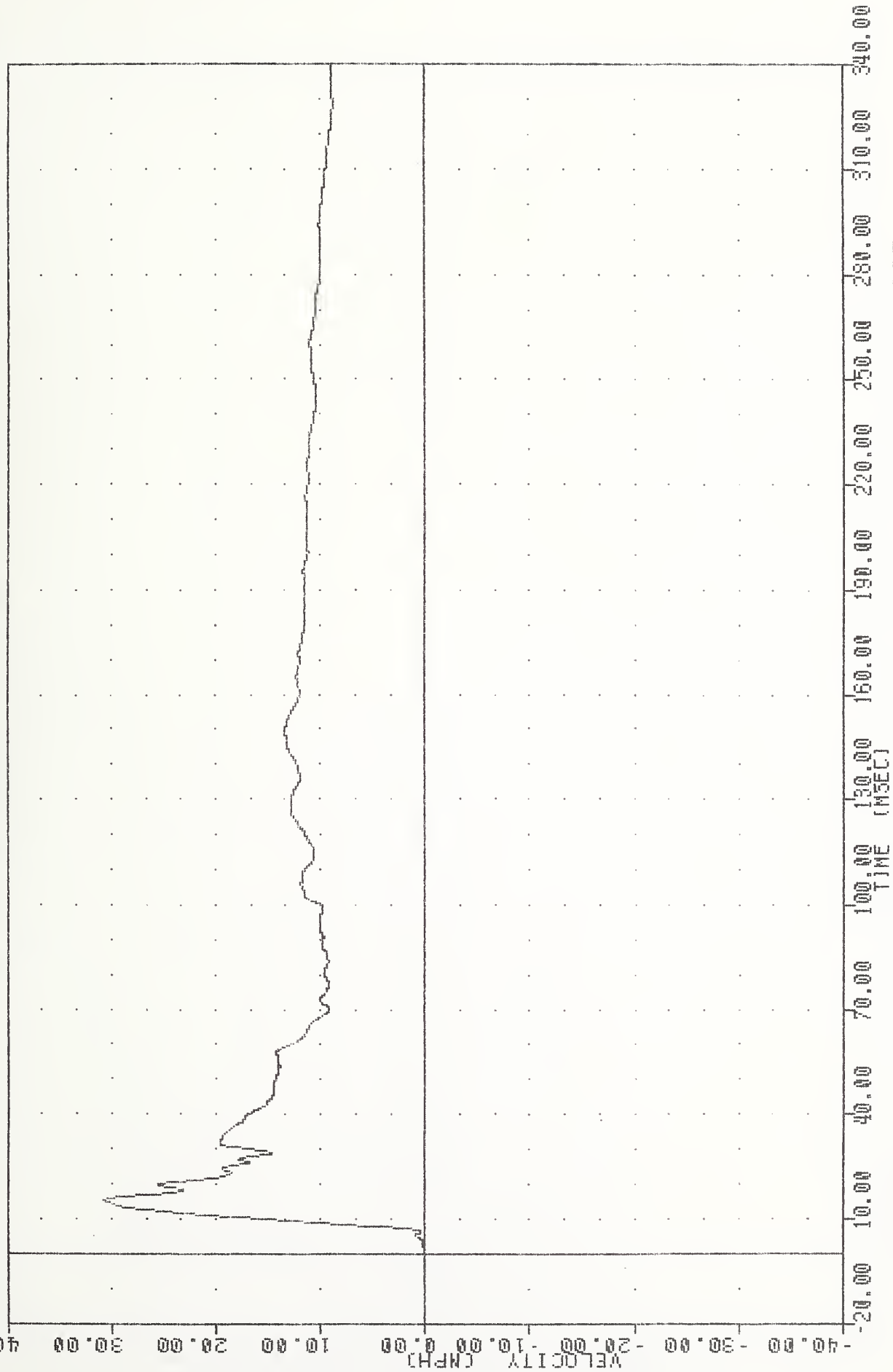
FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -86.06 20.25, 224.44 13.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT DOOR (POSITION 6) ACCELERATION Y AXIS

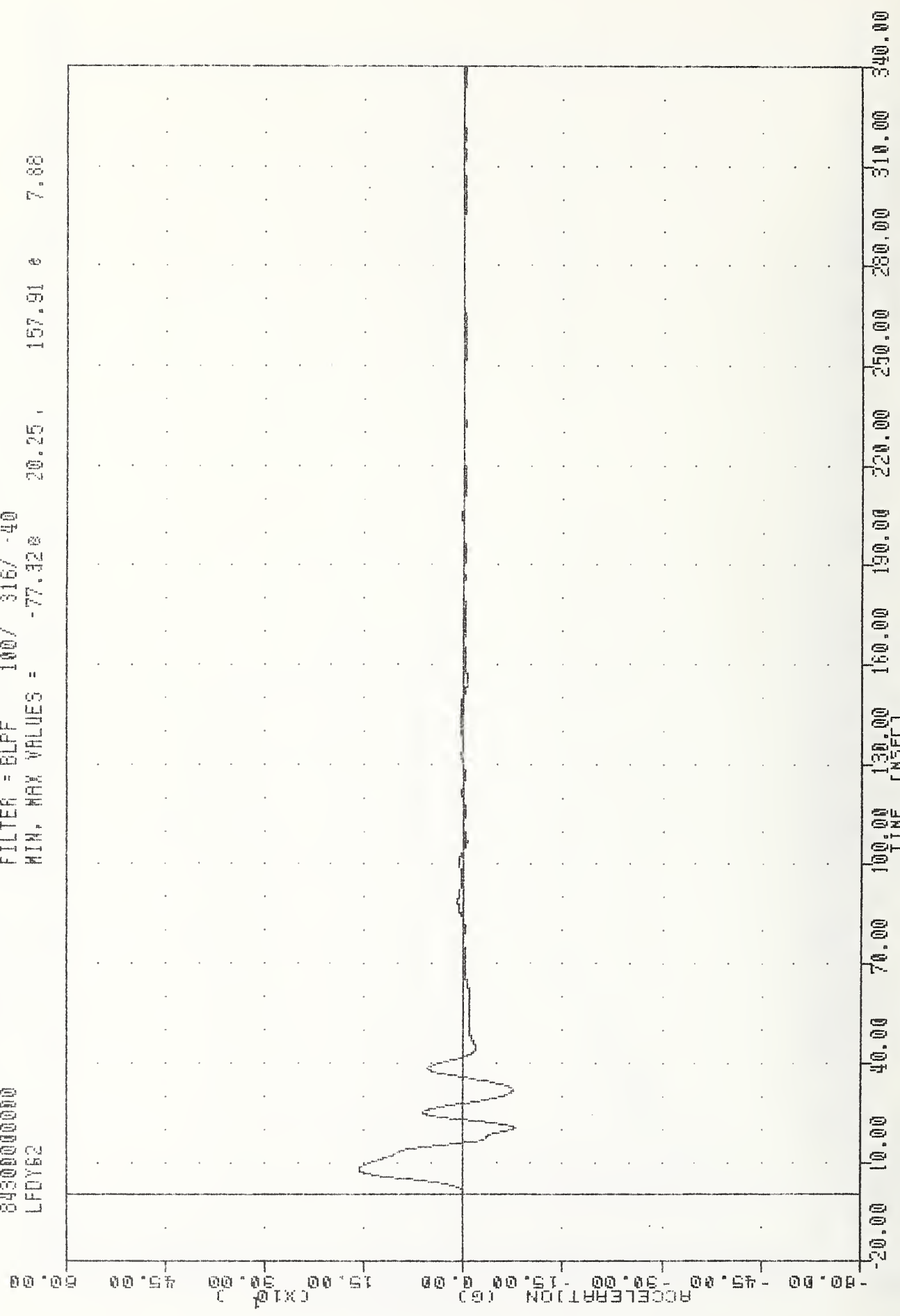
TRC 841026 17NDV-84 16:11:42
 SIDE AGGRESSIVE ATTRIBUTES
 84300000000
 LFDYV1
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 0.00e -17.00. 30.71 e 15.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LFDYGI

TRF 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
LFDY62

PLU1 UN1E 1-NOV-84 16:10:09
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -77.320 20.25, 157.91 6 7.88



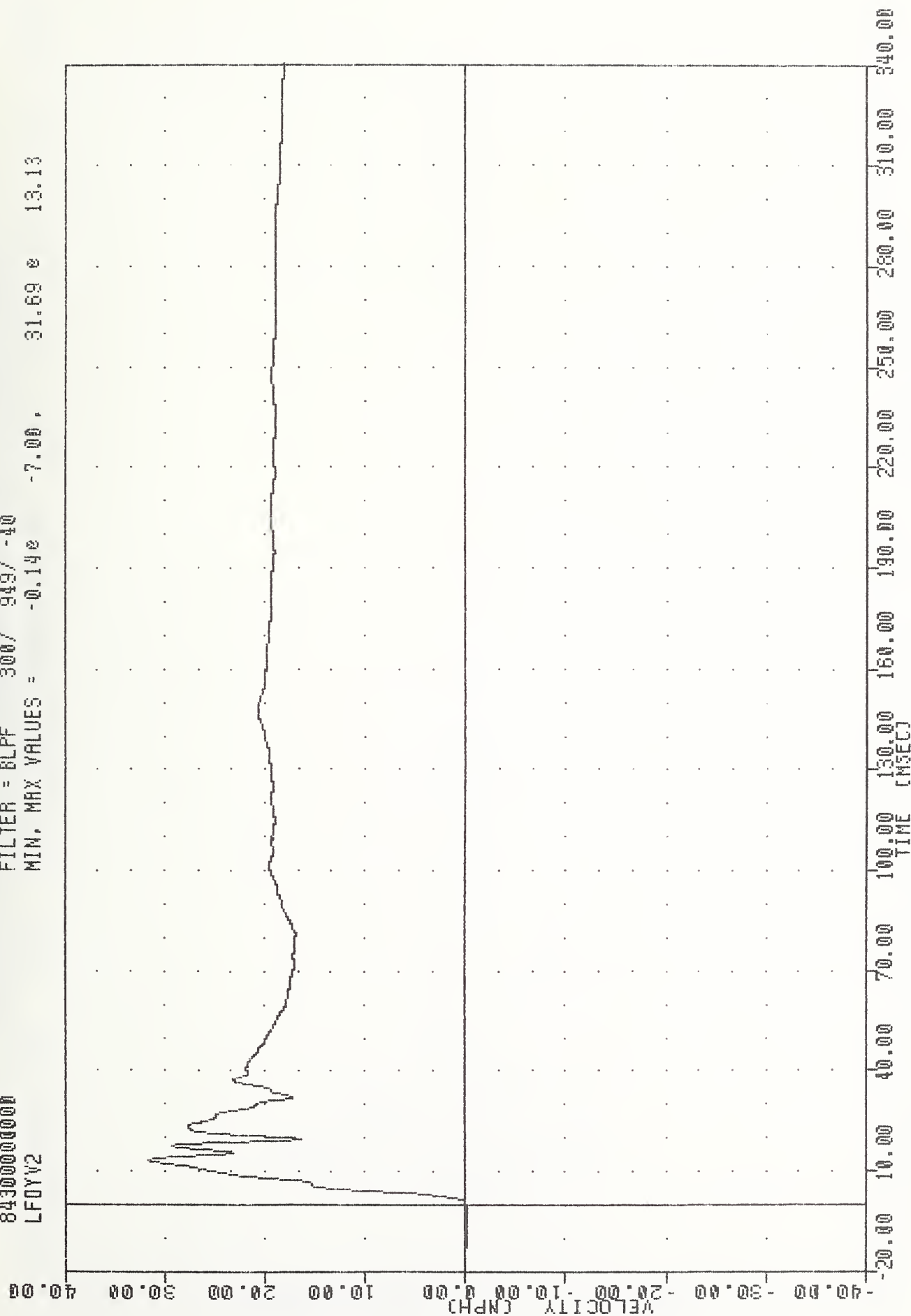
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT DOOR (POSITION 8) ACCELERATION Y AXIS

IMC , 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
LFDYV2

PLUT DATE 1-NOV-84 16:11:42

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -0.14e -7.00, 31.69 e 13.13



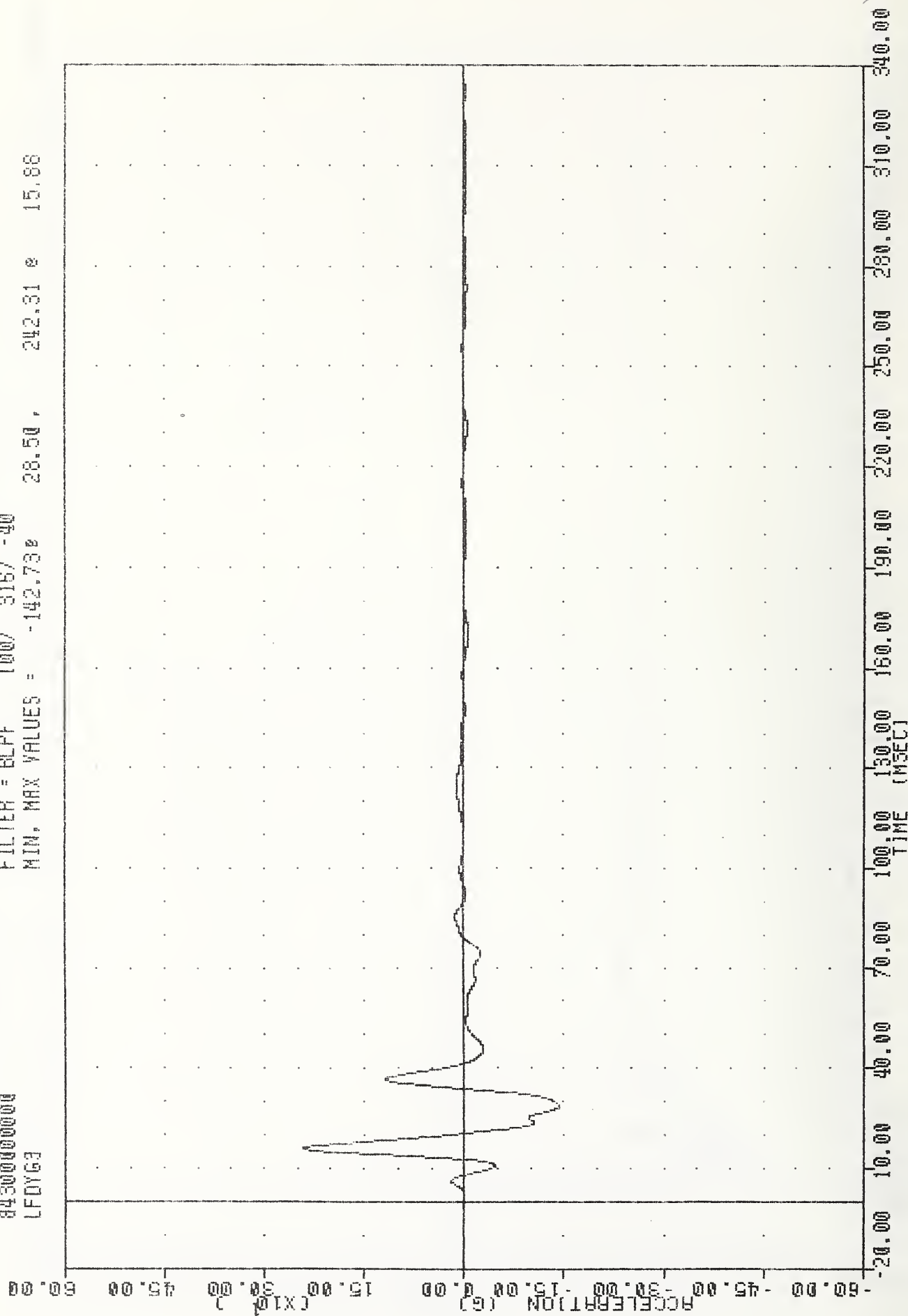
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDY62

IRC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LFDY63

PLUT DATE 1-NOV-84 15:10:09

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -142.730 28.50 , 242.31 e 15.88



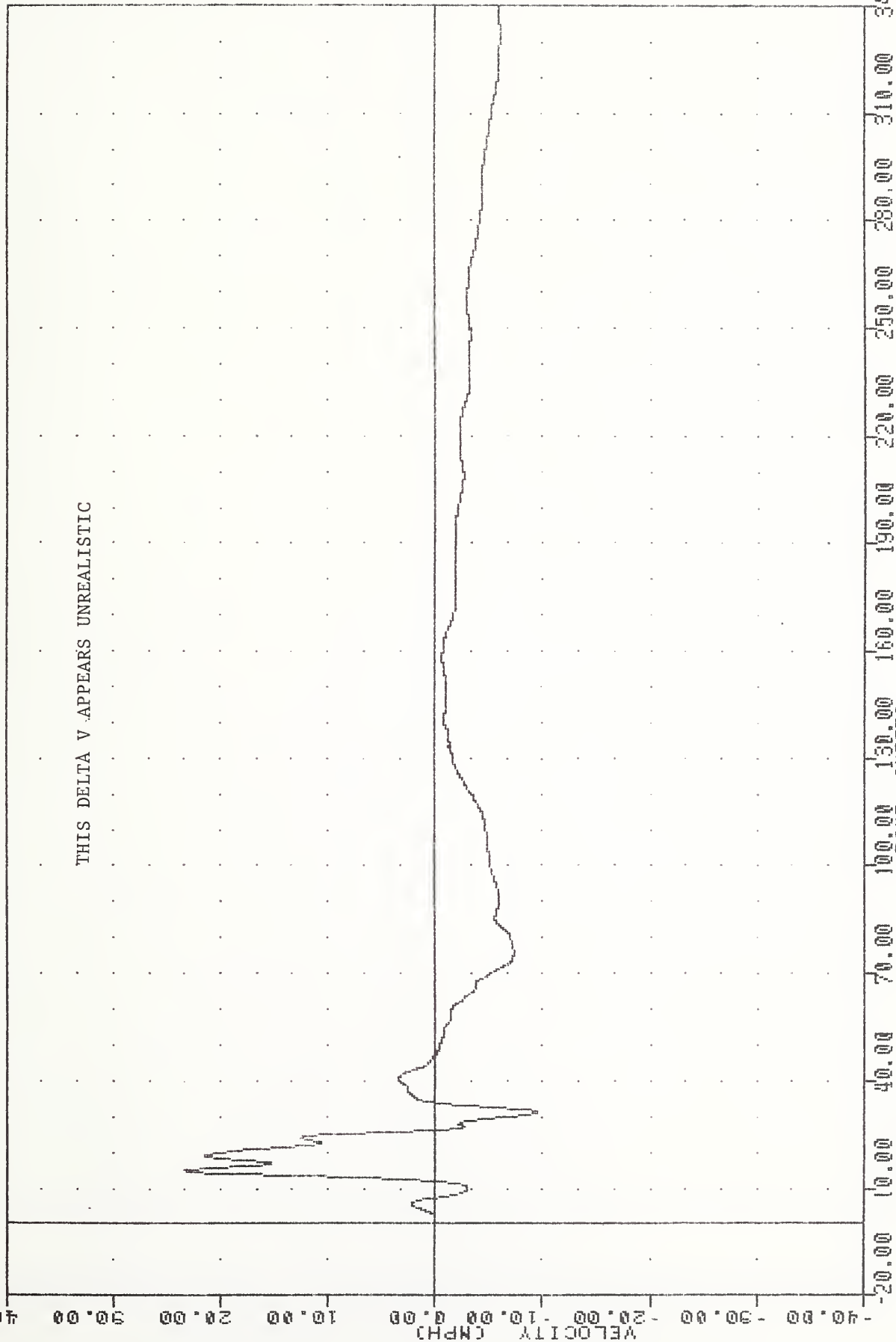
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT DOOR (POSITION 9) ACCELERATION Y AXIS

IAC ,841026
SIDE AGGRESSIVE ATTRIBUTES
84300000000
LFDY73

PLOT DATE 1-NOV-84 16:11:42

FILTER = BLPF 300/ 849/ -40

MIN, MAX VALUES = -9.498 31.00 , 23.29 14.75



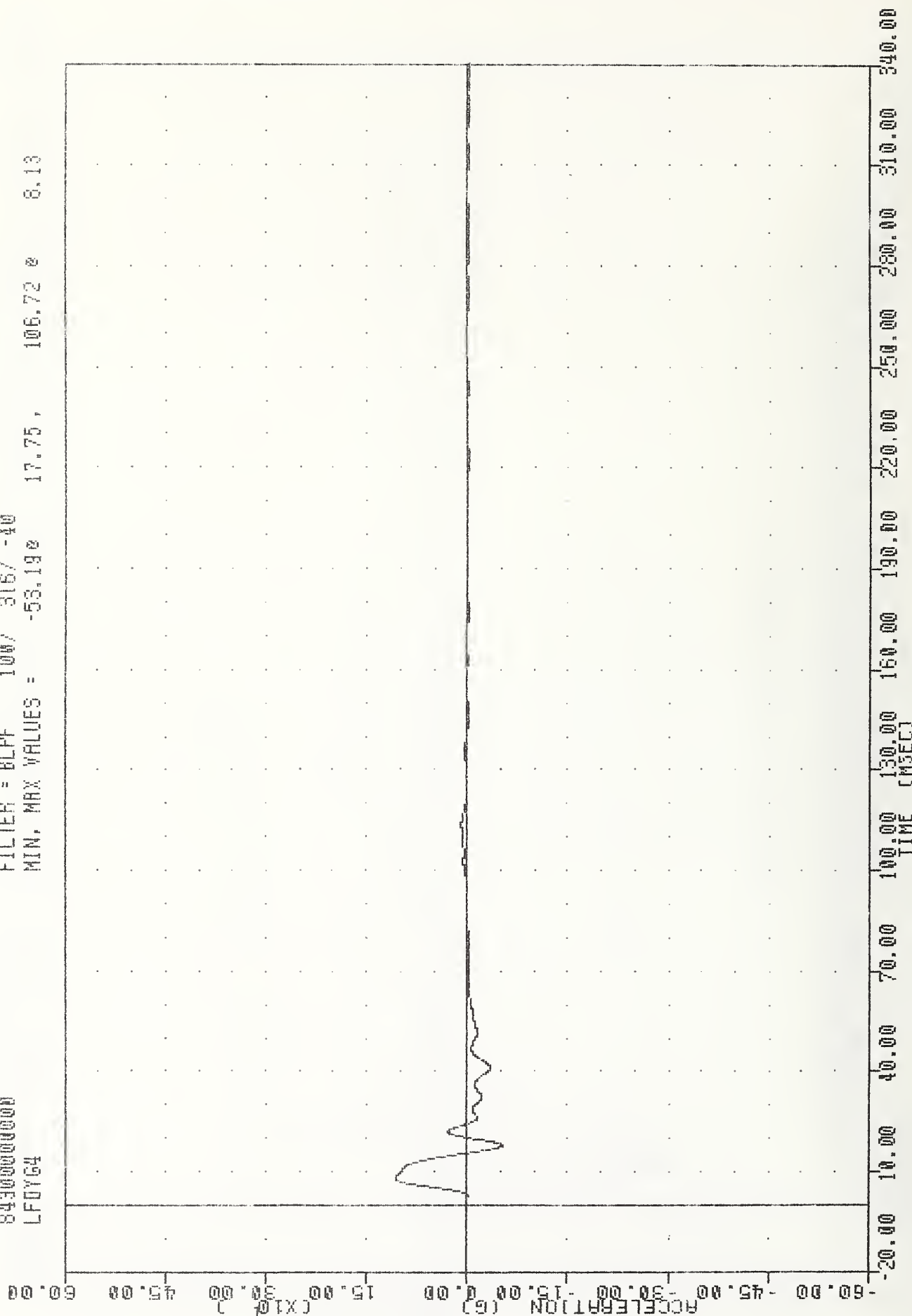
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDY63

INC , 841026
SIDE AGGRESSIVE ATTRIBUTES
843000000000
LF0Y64

PLU1 DATE 1-NOV-84 16:10:09

FILTER = BLPF 100/ 315/ -40

MIN. MAX VALUES = -53.190 17.75, 106.72 0 8.13



IRC 841026 PLOT DATE 1-NOV-84 16:11:42

SIDE AGGRESSIVE ATTRIBUTES

FILTER = BLPF 300/ 949/ -40

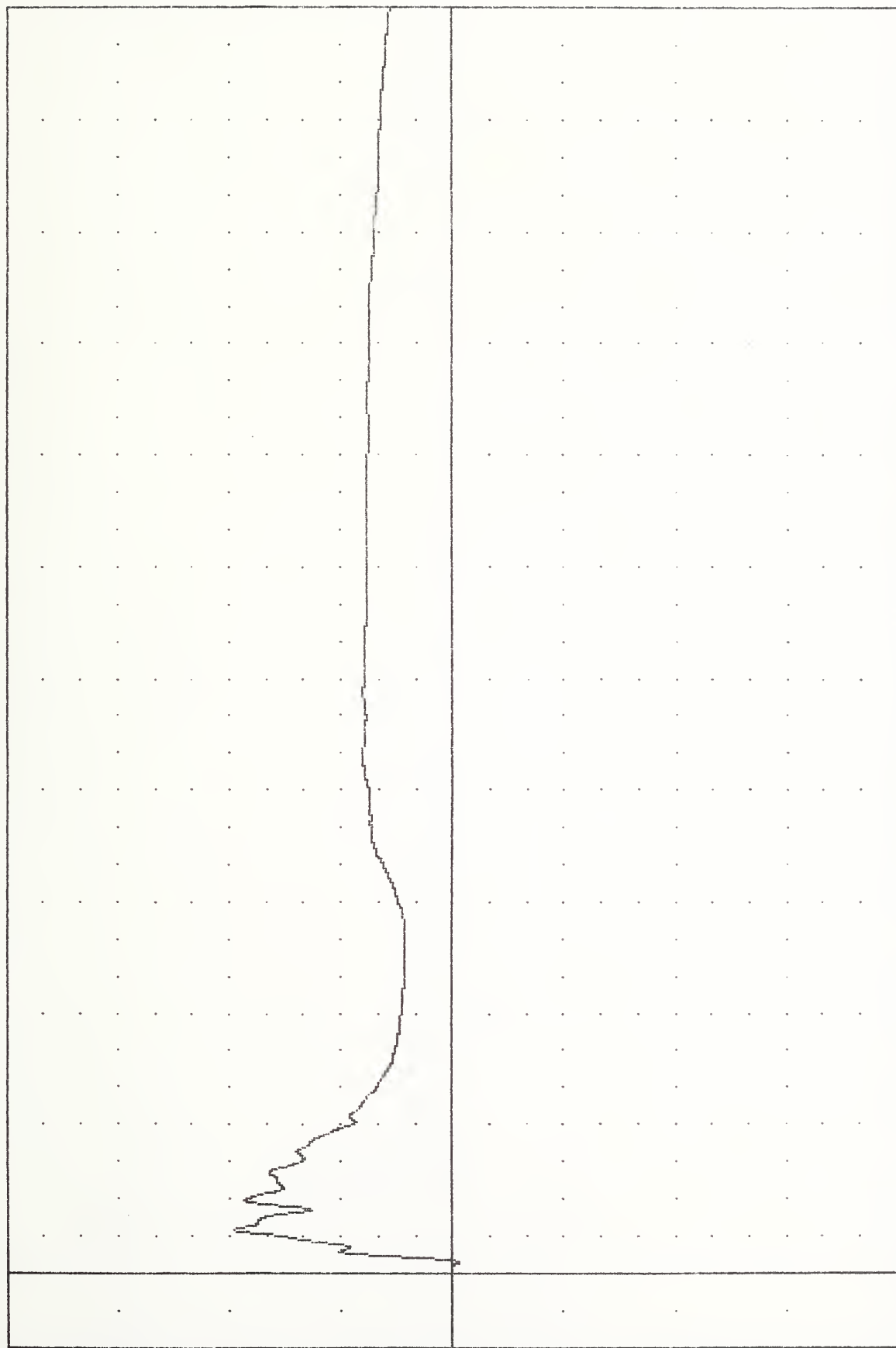
MIN. MAX VALUES = -0.528 2.75 19.56 11.50

843000000000

LFDYV4

40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00

B-99



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDYV4

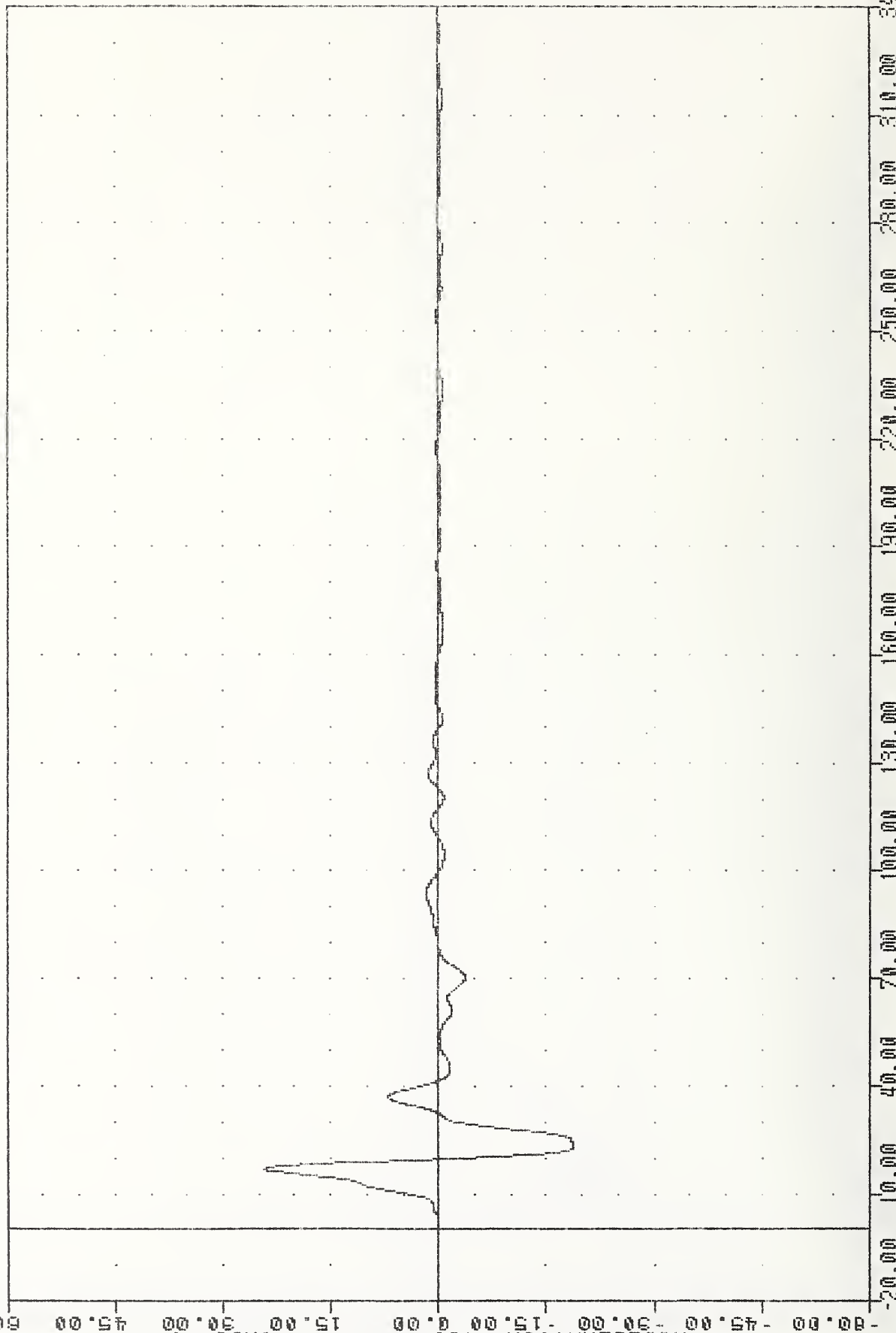
IAC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 LFDY85

PLDT UNIT 1-NOV-84 15:10:09

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -187.62 23.38 242.65 16.63

ACCELERATION (G)
 (X10⁴)



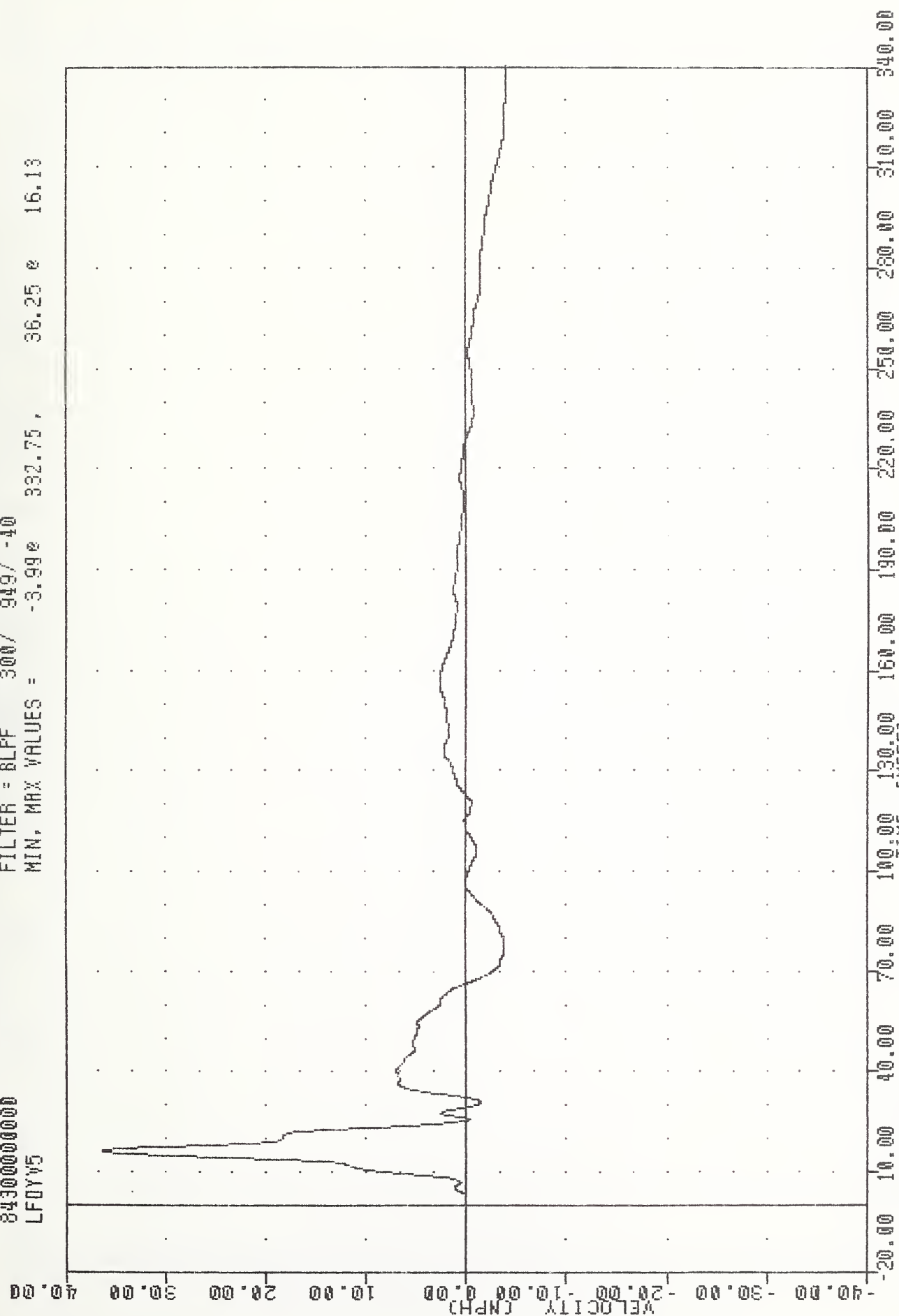
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT DOOR (POSITION 11) ACCELERATION Y AXIS

INL 841120
SIDE AGGRESSIVE ATTRIBUTES
843000000000
LFDYV5

PLUI DATE 1-NOV-84 16:11:42

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -3.990 332.75, 36.25 0 16.13



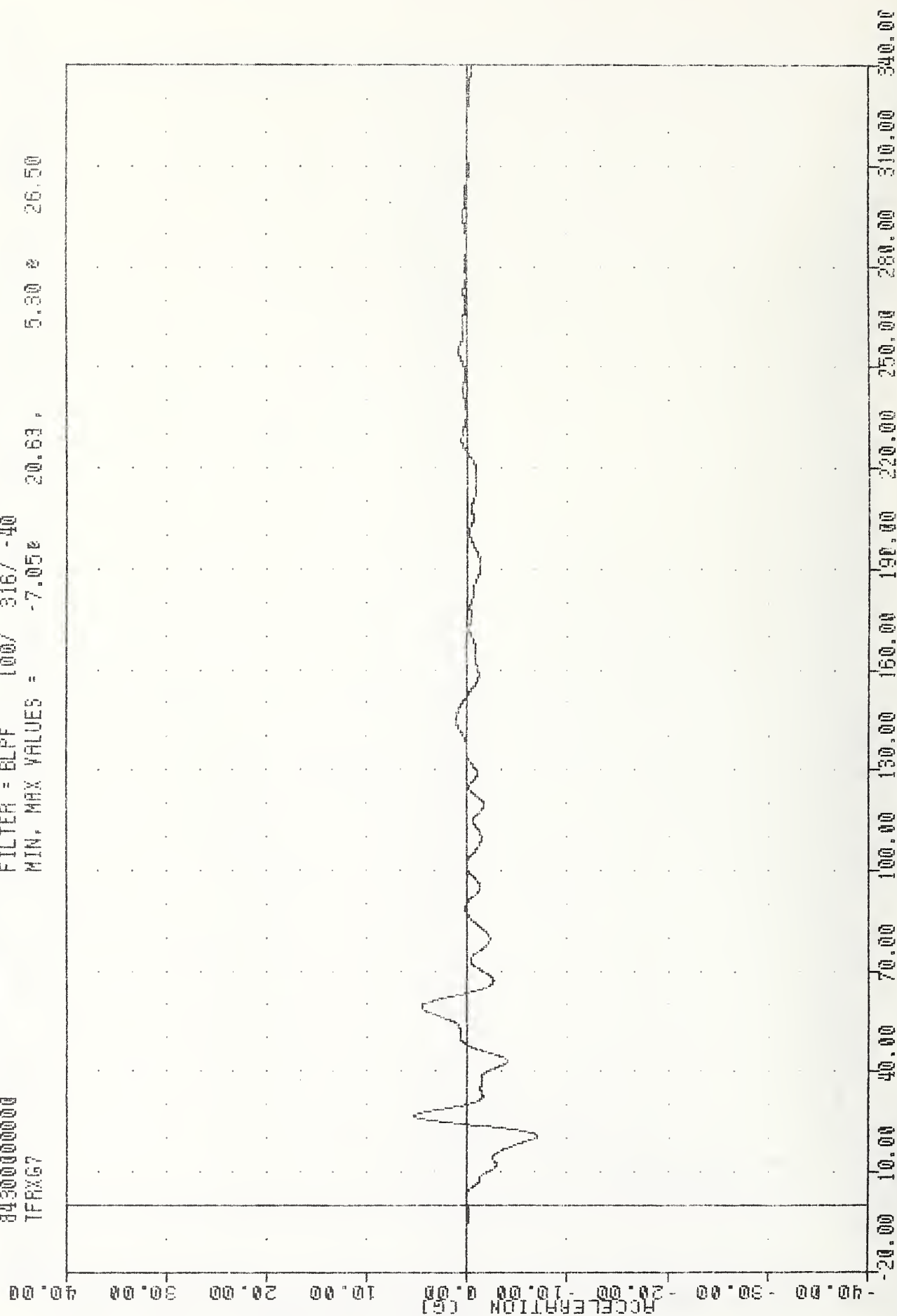
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDY65

IRU , 841025
SIDE AGGRESSIVE ATTRIBUTES
84300000000
TFRXG7

PLOT DATE 1 NOV 84 16:10:03

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -7.05e 20.63 , 5.30 e 26.50



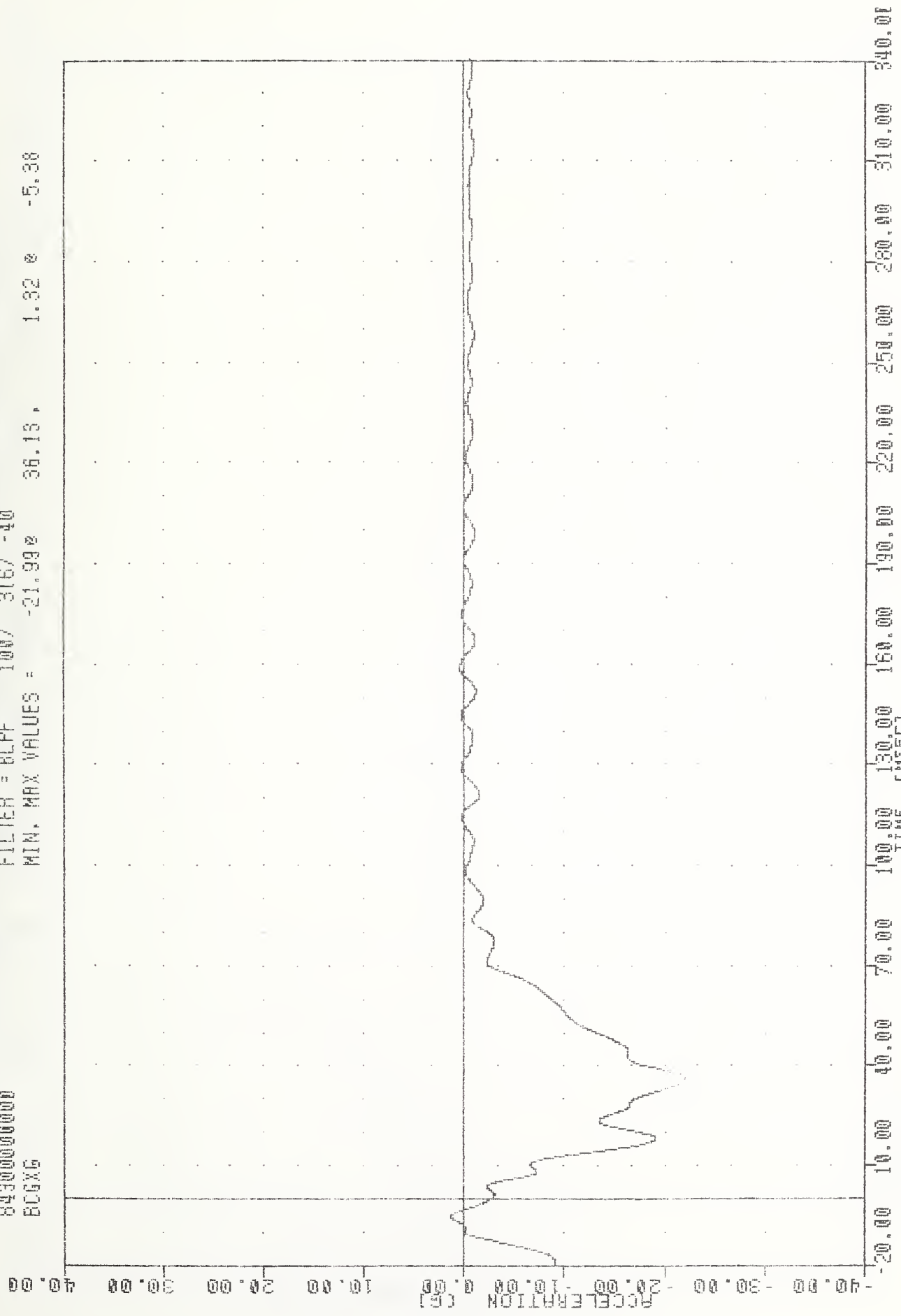
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE TRUNK FLOOR RIGHT ACCELERATION Y AXIS

INC , 841W26
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 BCGXG

PLU1 UNIE 1-MUV-84 16:10:09

FILTER = BLFF 100/ 316/ -40

MIN. MAX VALUES = -21.990 36.13 , 1.32 0 -5.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 BARRIER CENTER OF GRAVITY X AXIS

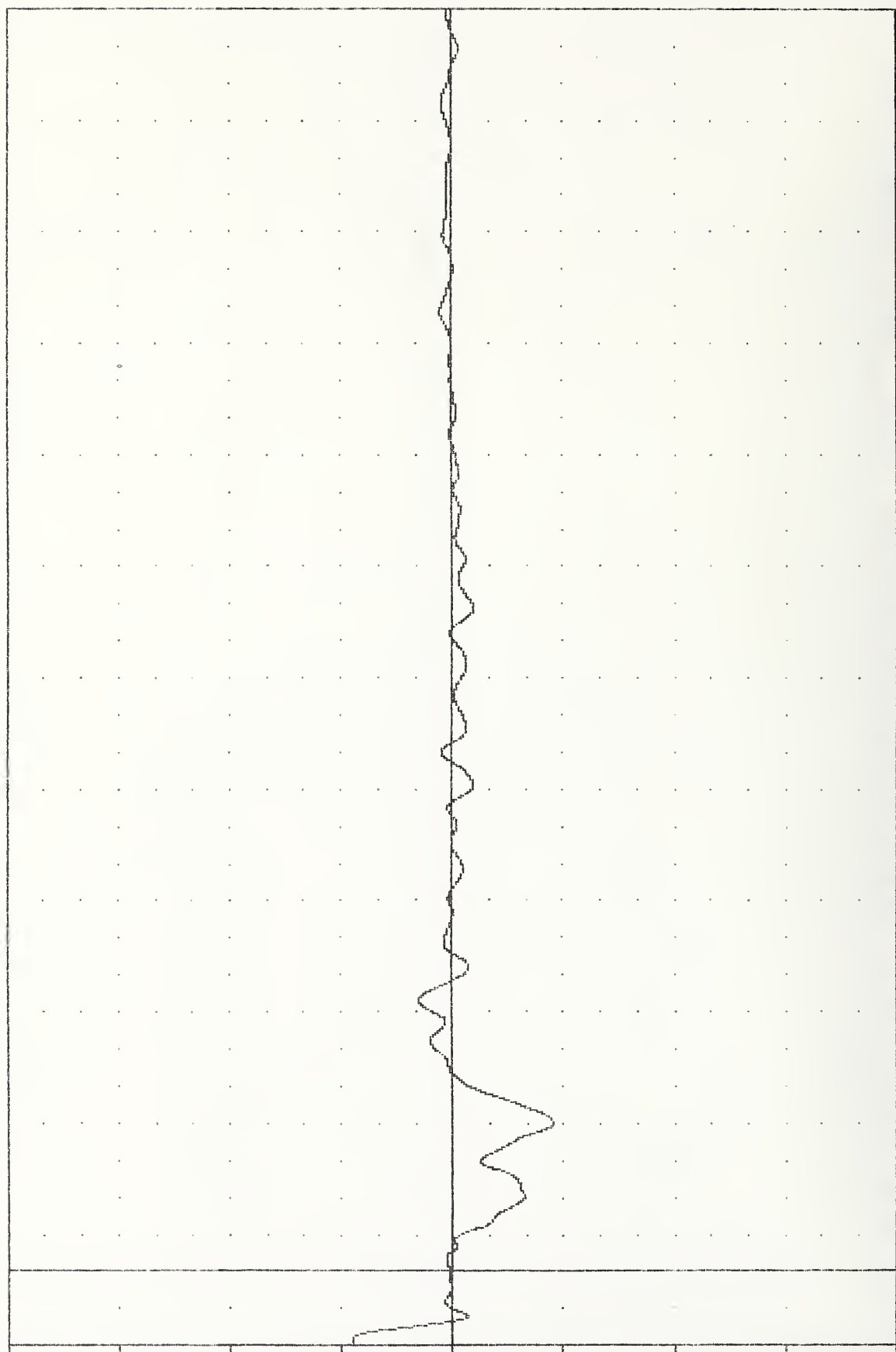
INC 841025
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 BC6Y6

PLU1 DATE 1-NOV-84 16:10:09

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -9.05e 39.68, 9.02 e -20.00

ACCELERATION (G)

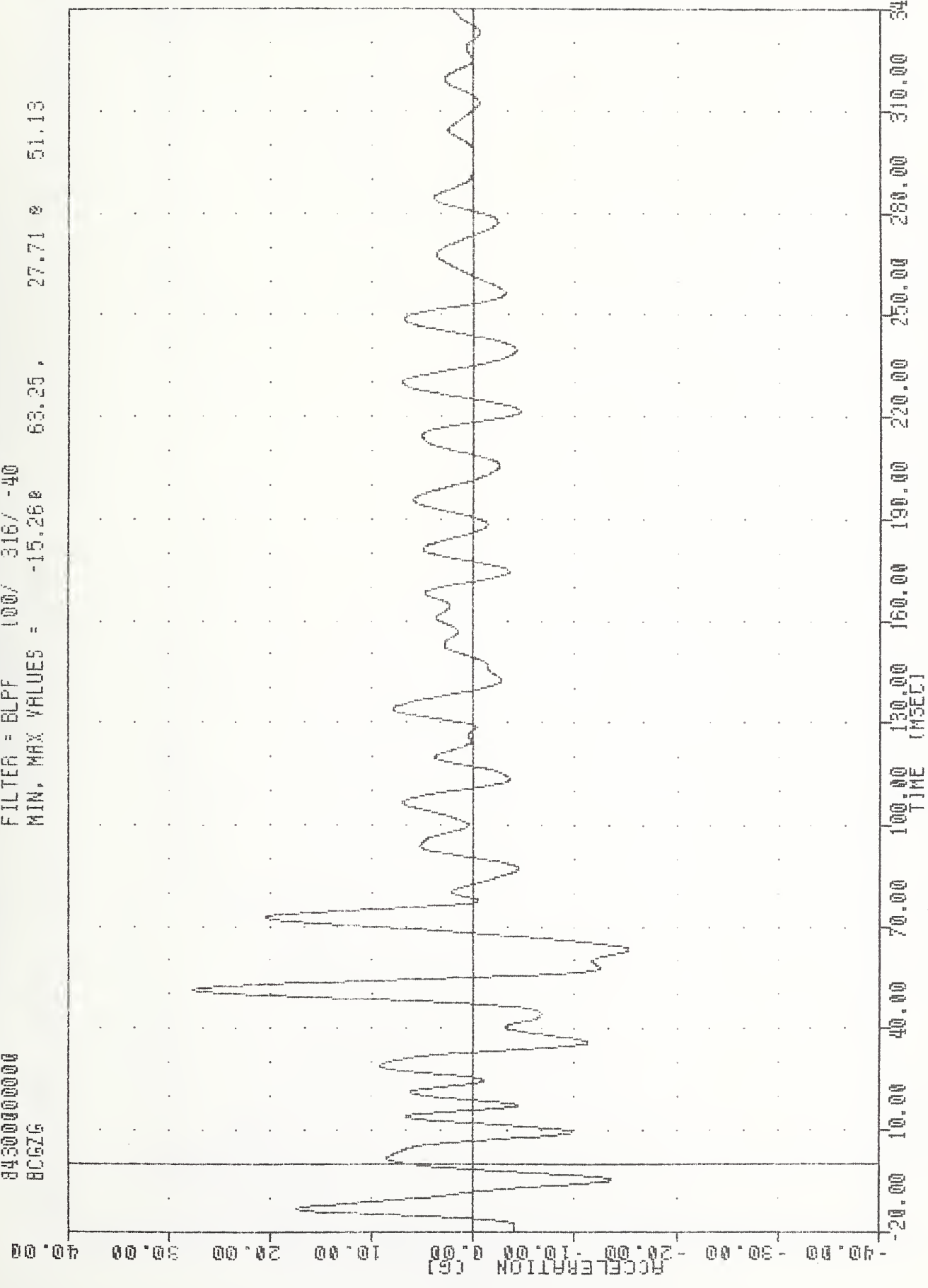


B-104

TIME (NSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 BARRIER CENTER OF GRAVITY Y AXIS

IRL 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 BCGZG
 PLU1 UN1E I-NDVF-84 16:10:09
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -15.26e 63.25, 27.71 e 51.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 BARRIER CENTER OF GRAVITY Z AXIS

IHL
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 BCGRG

FLUT DATE 1-NOV-84 16:10:09

FILTER = BLFF 100/ 316/ -40
 MIN. MAX VALUES = 0.230 208.63, 30.26 51.00

70.00



-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 BARRIER CG RESULTANT

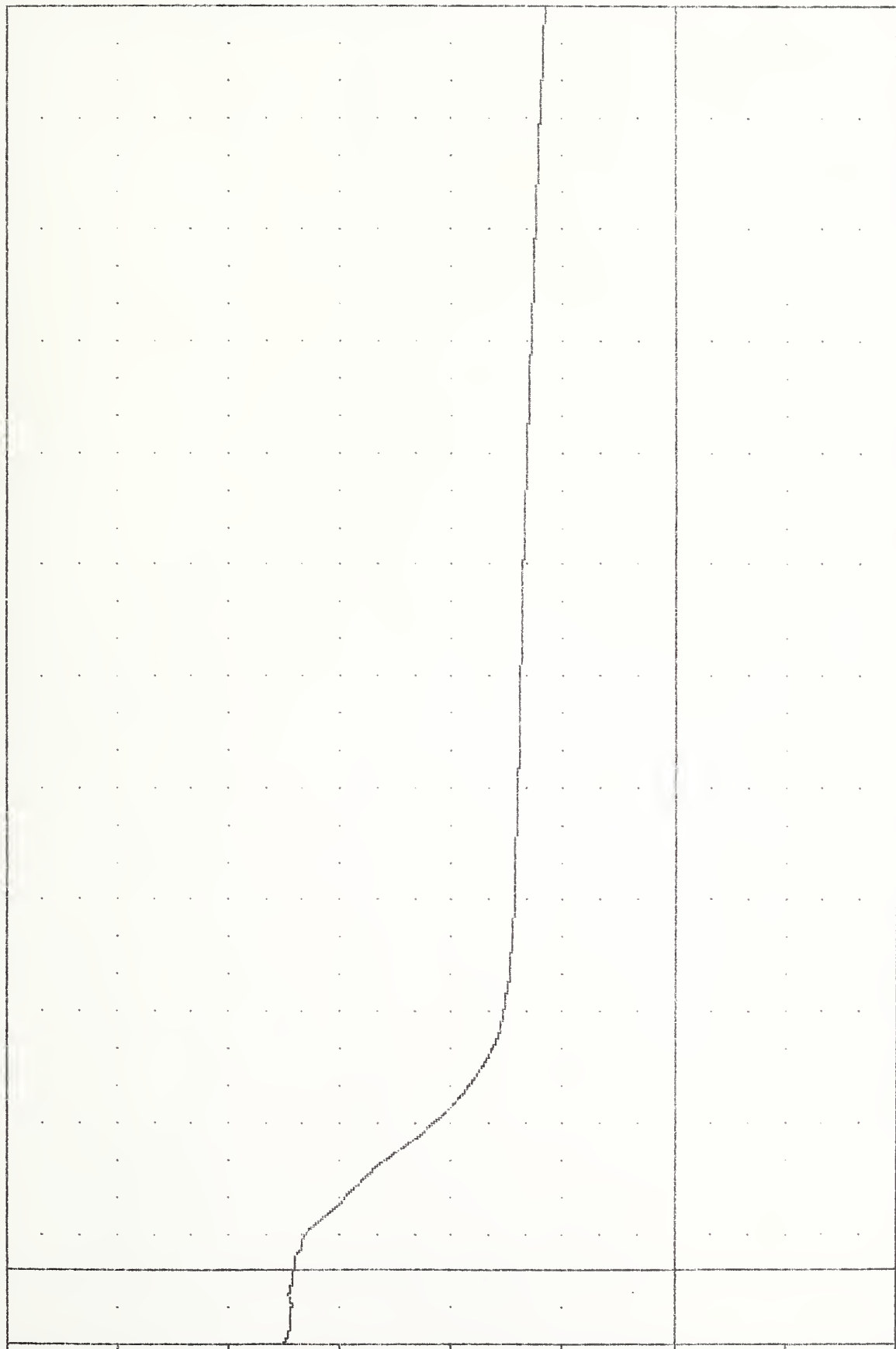
IHC , 841026
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 BCGXY

PLOT DATE 1-NOV-84 16:11:42

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 11.60e 340.00, 35.10 e -20.00

VELOCITY (MPH)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

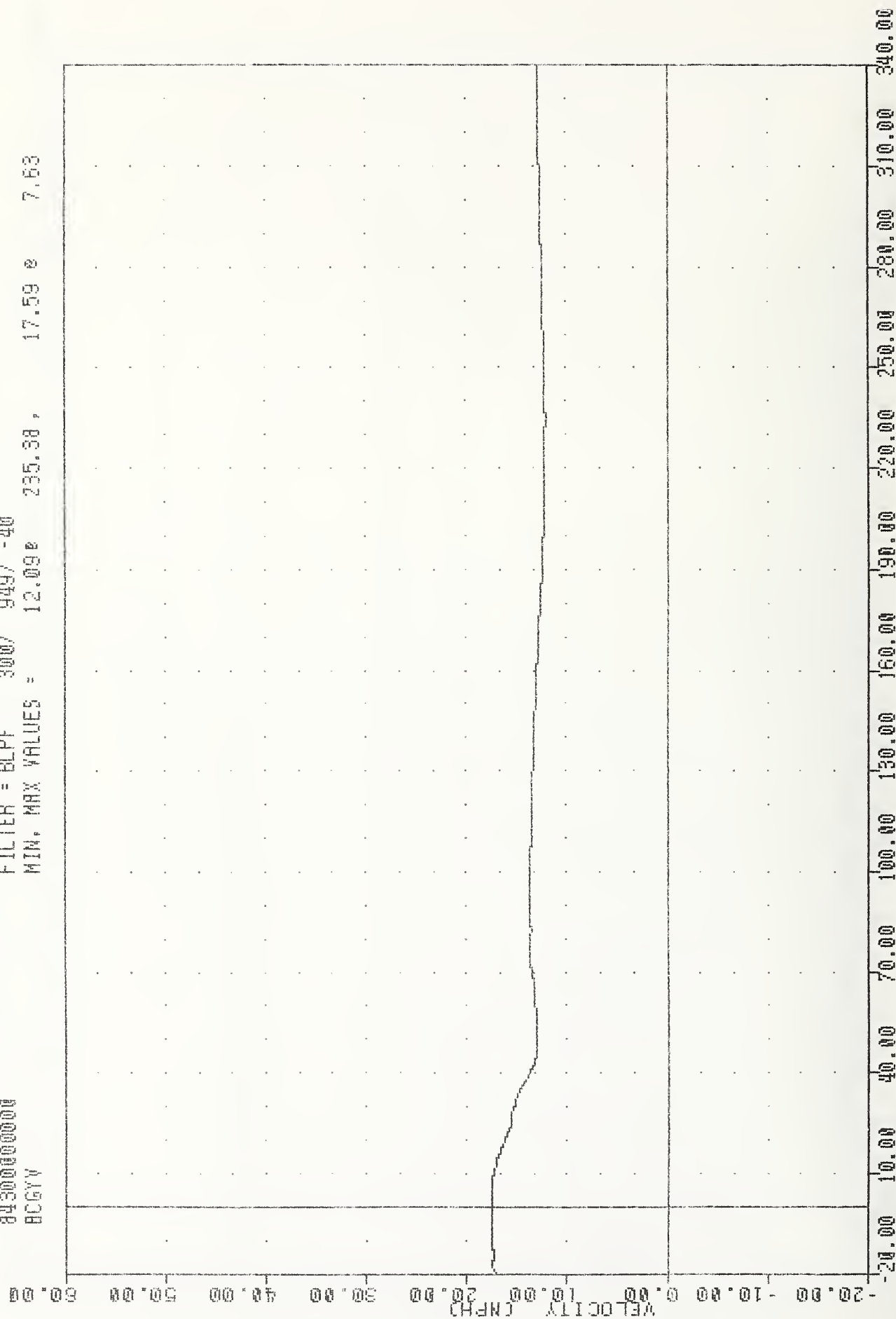
DELTA V USING BCGXG

IRC
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 BCGYV

PLUI DATE 1-NOV-84 16:11:42

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 12.09e 235.38 , 17.59 e 7.63



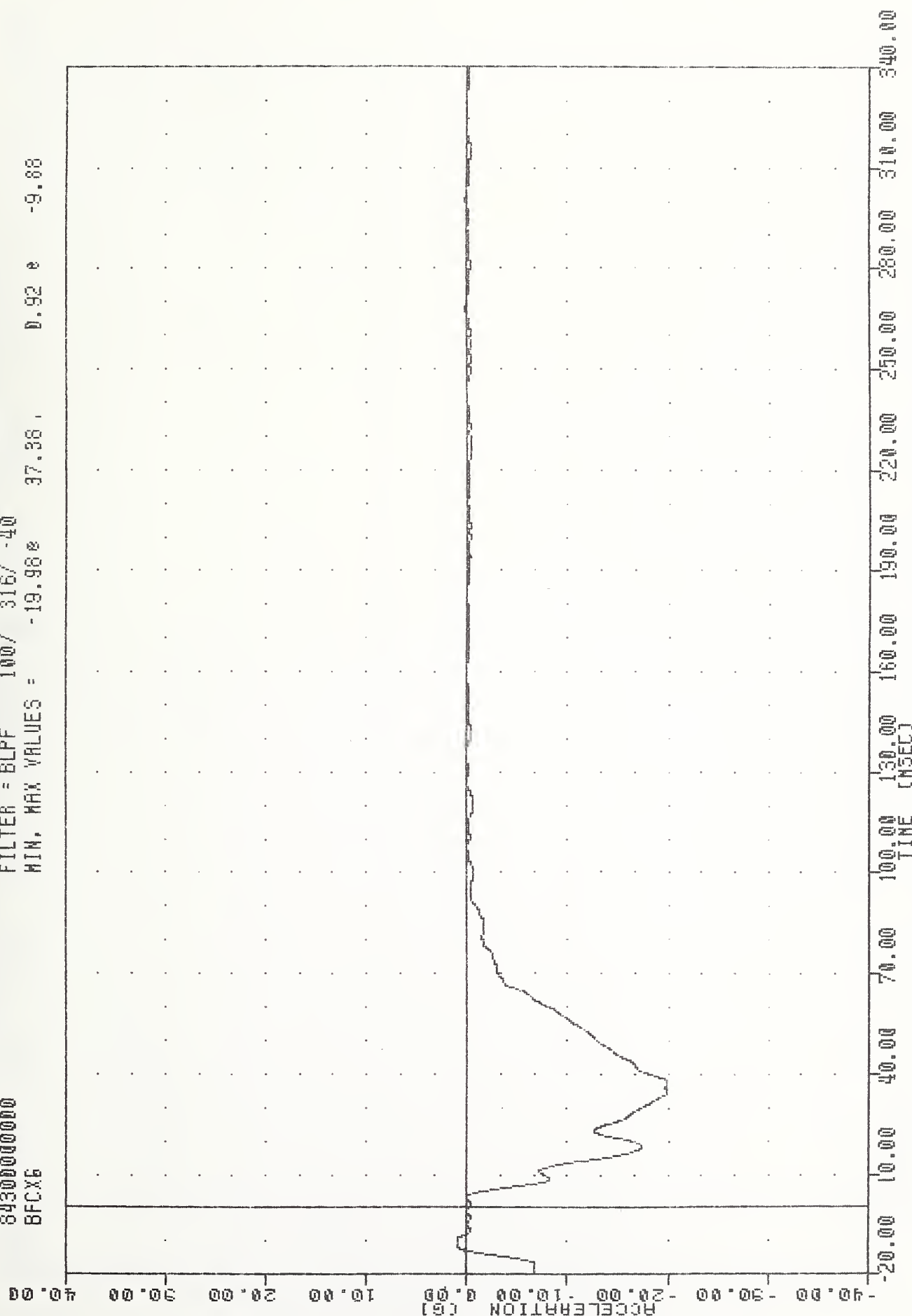
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BCGYG

IHC , 841025
 SIDE AGGRESSIVE ATTRIBUTES
 84300000000
 BFCX6

FLU1 UM1E 1-MUY-84 16:10:03

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -19.98e 37.38 , 0.92 e -9.88



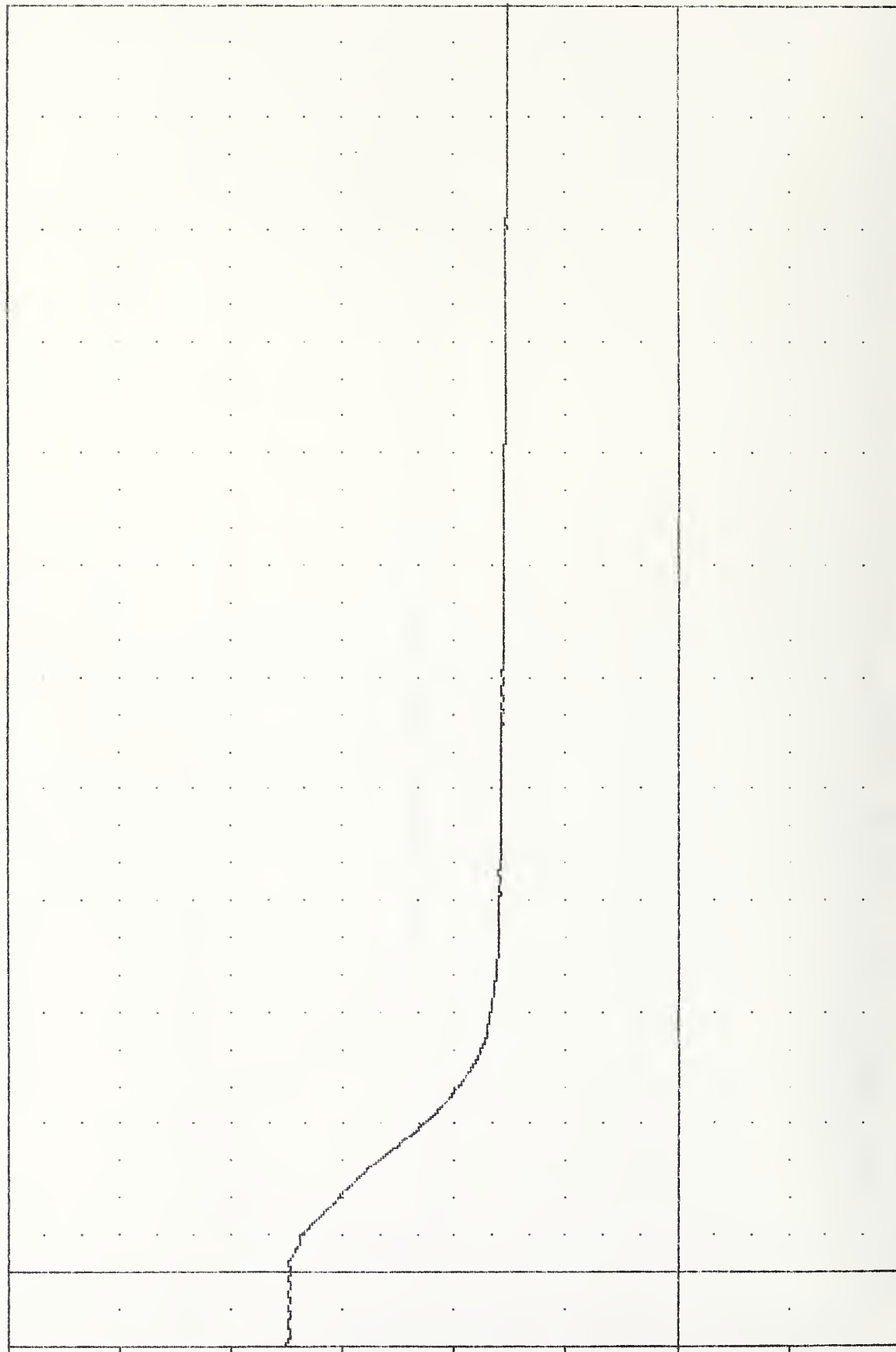
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 BARRIER FRONT CROSSMEMBER ACCELERATION X AXIS

IHC
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 BFCXV

PLU1 UNIT 1-NOV-84 16:11:42

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 15.16e 340.00, 35.10 e -20.00

-20.00
 -10.00
 0.00
 10.00
 20.00
 30.00
 40.00
 50.00
 60.00
 VELOCITY (MPH)



B-110

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BFCXG

PLU1 DATE 1-NDV-84 16:10:09

INL 841026

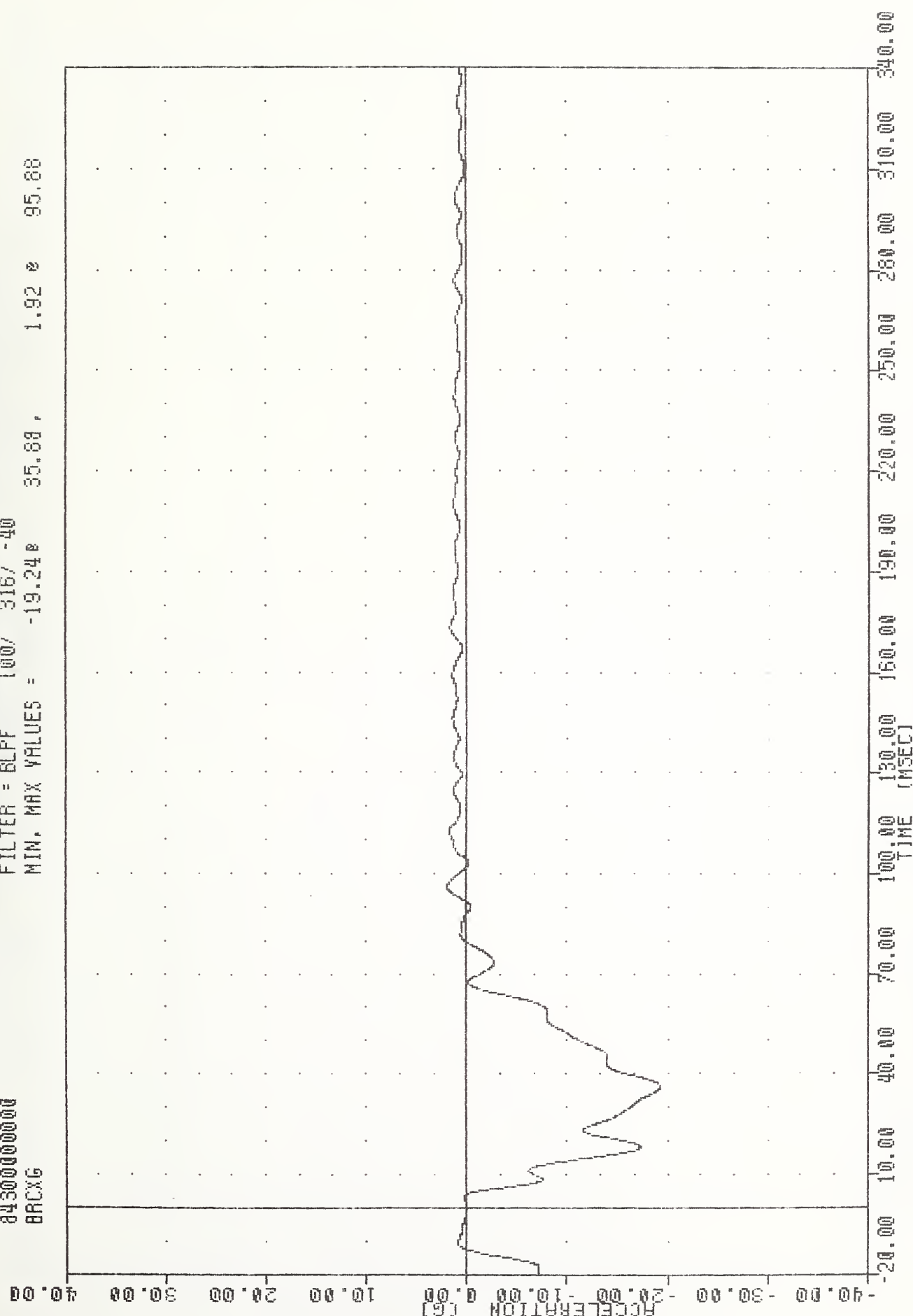
SIDE AGGRESSIVE ATTRIBUTES

843000000000

FILTER = BLPF 100/ 316/ -40

BRXG

MIN. MAX VALUES = -19.248 35.88 , 1.92 8 95.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER REAR CROSSMEMBER ACCELERATION X AXIS

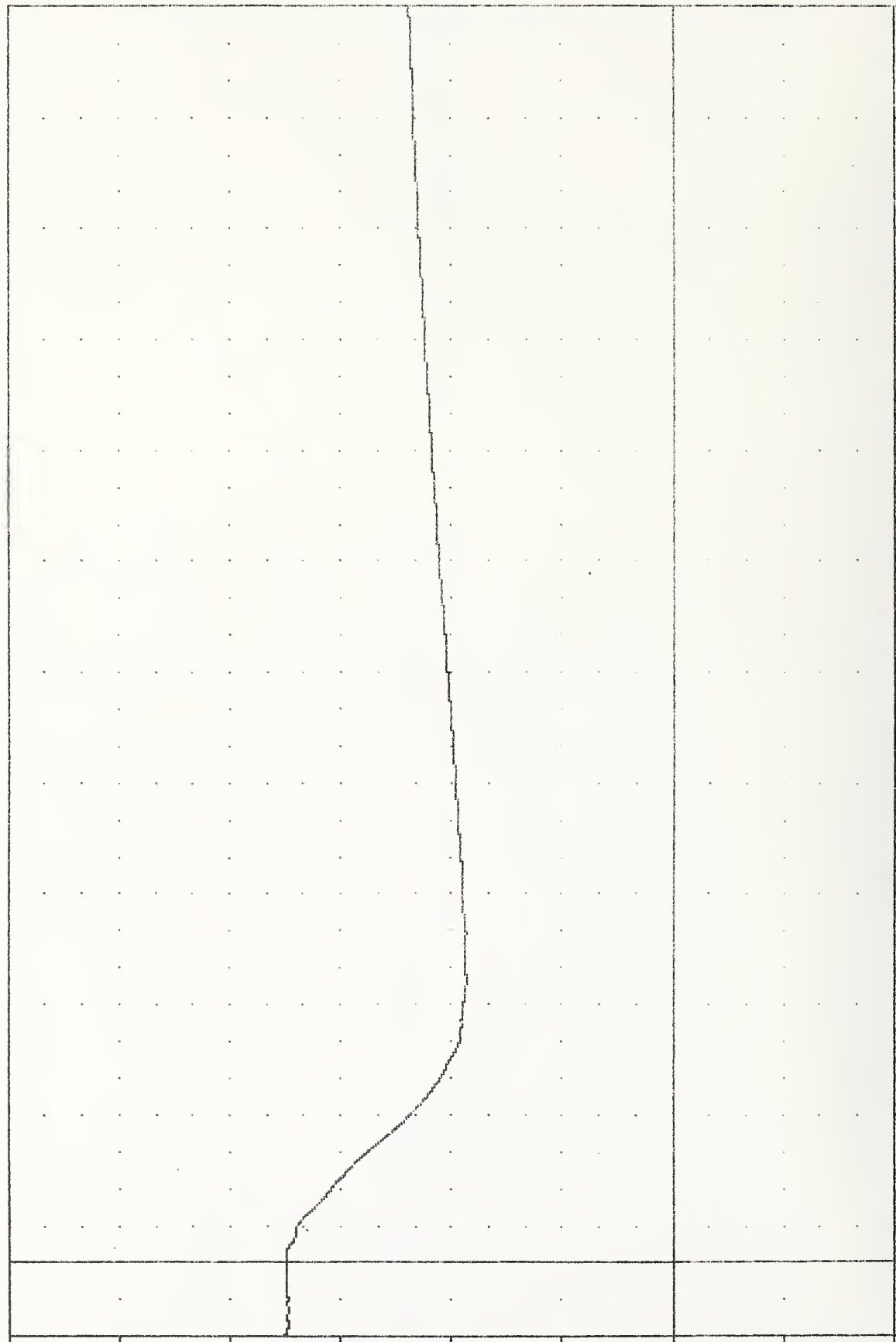
IAC , 841025
 SIDE AGGRESSIVE ATTRIBUTES
 843000000000
 BACXY

PLUT DATE - 1-NOV-84 16:11:42

FILTER = BLFF 300 / 949 / -40

MIN. MAX VALUES = 18.64e 75.88 , 35.10 e -20.00

60.00
 50.00
 40.00
 30.00
 20.00
 10.00
 0.00
 -10.00
 -20.00
 VELOCITY (MPH)



-20.00 10.00 20.00 30.00 40.00 50.00 60.00
 100.00 150.00 200.00 250.00 300.00 340.00
 TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BRCXG

TL 242 .B457

Bell, L. 195

Side-impact
attributes

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